

HAPEMAN ELECTRONICS

761 North Cottage Road, Mercer, PA 16137 (724) 475-2033 Fax (724) 475-4291

BATTERY HEALTH TESTER

OPERATION MANUAL

ELECTRICAL REQUIREMENTS

- Input Voltage = 110VAC / 60Hz
- Input Current = 5A
- Battery Voltage = 0VDC to 120VDC
- Max Battery Load Current = 1000A-1100A
- Duty Cycle = 10 second start delay, 15 second load test, 15 minute cool down

CAUTIONS

- **DO NOT disconnect the tester from the 110VAC source until the red TEST / COOLDOWN light is off and the green READY light is on again.**
- **DO NOT attempt to perform another test until the red TEST / COOLDOWN light is out (no longer blinking) and the green READY light is on.**
- **The tester can be disconnected from the 110VAC source and moved to another location for further testing ONLY when the green READY light is ON.**
- **BE EXTREMELY CAREFUL NOT TO TOUCH THE KNIFE SWITCH CONNECTION INSIDE THE LOCOMOTIVE CAB.**
- **BE EXTREMELY CAREFUL TO HOLD THE TEST LEAD BATTERY CONNECTORS ONLY BY THE INSULATED PART OF THE CLIP WHEN CONNECTING TO THE BATTERY BANKS.**

OPERATING PROCEDURE

1. Plug power cord into a 110VAC source.
2. Observe BATTERY #1 and BATTERY #2 voltmeters power up and display 0.00V.
3. Green READY light will become illuminated.
4. Connect the test leads: Black (NEG) to the (-) on battery bank 1; White (COM) to the common between the two battery banks; Red (POS) to the (+) on battery bank 2.
5. Connect the thick black insulated cable plug to the knife switch inside the locomotive cab behind the engineer's seat. Make sure to observe the top/bottom markings on the plug (top marked side up).
6. Record the BATTERY #1 and BATTERY #2 voltages displayed on the panel meters prior to performing the battery test.
7. Make sure that the green READY light is on.
8. Press the START/STOP button to begin the test.
9. Observe that the green READY light flashes for 10 seconds.
10. After 10 seconds the contactor will close, the red TEST / COOLDOWN light will illuminate steady, and the top strobe light will come on signaling the test is in progress.
11. The load test will remain in progress for 15 seconds, then the contactor will open, the strobe light will go out, and the red TEST / COOLDOWN light will blink signaling the 15 minute cool down period.
12. Record the end of test voltage displayed on the BATTERY #1 and BATTERY #2 voltmeters after the contactor is open and the red TEST / COOLDOWN light begins to blink. The end voltage will remain displayed on the voltmeters for 15 minutes.
13. The red TEST / COOLDOWN light will blink for the remainder of the 15 minute cool down period.

TROUBLE SHOOTING GUIDE

SYSTEM DOES NOT POWER UP UPON PLUGGING UNIT IN

- Check outlet for power.
- Check GFI unit on cord – if ON light is off press reset – ON light should illuminate.

GFI ON CORD TRIPS UPON PLUGGING UNIT IN

- Refer unit to a qualified service technician – DO NOT try to service the unit.

EITHER OR BOTH METERS DISPLAY 0.00 OR NEGATIVE VALUES AFTER CONNECTIONS ARE MADE

- Check test lead connections to make sure the connections are good and the leads are not reversed.
- Check test leads and clips for damage.

METER VALUES STAY THE SAME AFTER CONTACTOR CLOSES TO BEGIN TEST

- Check knife switch plug to make sure it is plugged in properly.
- Check knife switch plug and cables for damage.

METERS DO NOT RETAIN VALUES AFTER 15 SECOND LOAD TEST ENDS

- Refer unit to a qualified service technician – DO NOT try to service the unit.

CONTACTOR DOES NOT CLOSE WHEN TEST START/STOP BUTTON IS DEPRESSED

- Thermal switch may be tripped – wait 15 minutes and try to start test again – if the contactor still does not close refer unit to a qualified service technician.

| PART DESCRIPTION | HAPEMAN PART NUMBER |
|--|----------------------------|
| 1 Battery Test Stand Weldment Frame | HE28020-523 |
| 2 Closure Weldment Front | HE28020-525 |
| 3 Closure Weldment Side | HE28020-526 |
| 4 Contactor Plate | HE28030-1727 |
| 5 Control Indicator Plate | HE28030-1728 |
| 6 Fan Plate | HE28030-1734 |
| 7 Rigid 8" Pnumatic Caster | HE2809SF8X3-R |
| 8 Swivel/Brake 8" Pnumatic Caster | HE2809SF8X3-S |
| 9 Knife Switch Plug | HE280100 |
| 10 RedLion Meter w/Hapeman Programming | HE280PAXD0000 |
| 11 Fanuc PLC w/Hapeman Programming | HE280IC200AR014 |
| 12 Start/Stop Button | HE280814-0001 |
| 13 Green LED | HE280679-0024 |
| 14 Red LED | HE280679-7701 |
| 15 500A Fuse | HE280A100P500 |
| 16 250° Thermal Switch | HE28034C9064 |
| 17 8 Pin Octal Relay (120Vac Coil) | HE2805X827 |
| 18 8 Pin Octal Relay Base | HE2805X852 |
| 19 Red Battery Clip | HE280860-4540 |
| 20 Black Battery Clip | HE280860-4530 |
| 21 10" Cooling Fan | HE280592-0052 |
| 22 Strobe Light | HE2805WF97 |
| 23 Bridge Rectifier | HE280266-0051 |
| 24 Power Cord | HE2801FD55 |
| 25 GFIC Male Plug | HE2804HD21 |
| 26 4/0 600V Welding Cable | HE28001771 |
| 27 Instruction Label | HE280101 |
| 28 Warning Label | HE280102 |
| 29 Contactor (75Vdc Coil) | 41C662781G16 |
| 30 Resistor Grid | 84D716146G1 |
| 31 Strobe Guard | HE280103 |



HE28020-523
Weldment Frame



HE28020-525
Front



HE28020-526
Side



HE28030-1727
Contactor plate



HE28030-1734
Fan Plate

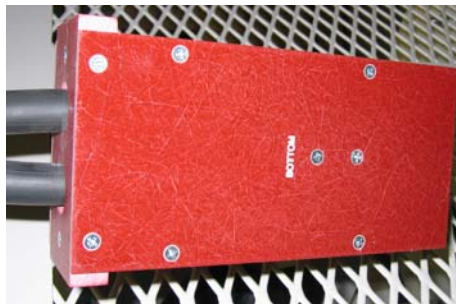


HE28030-1728
Control Plate



HE2809SF8X3-S
Swivel Caster

HE2809SF8X3-R
Rigid Caster



HE280100
Knife Switch Plug



HE280PAXD0000
Red lion Meter



HE280IC200AR014
Fanuc PLC

HE280679-0024
Green Light



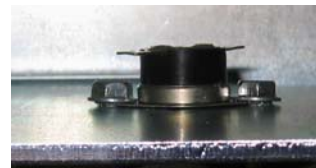
HE280679-7701
Red Light

HE2809SF8X3-S
Start/Stop Button



GE: 41C662781G16
Contactor

HE280A100P500
Fuse



HE28034C9064
Thermal switch

HE2805X852
Relay Base



HE2805X827
Relay



HE280860-4540
Red Battery Clip

HE280860-4530
Black Battery Clip



HE280592-0052
Fan

HE280103
Strobe Guard



HE2805WF97
Strobe



HE280266-0051
Rectifier

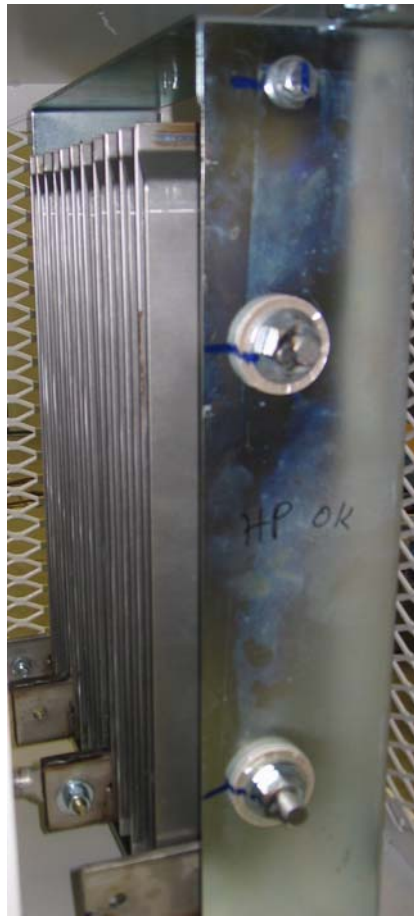
HE2801FD55
Power Cord



HE2804HD21
GFIC Plug



HE28001771
Welding Cable



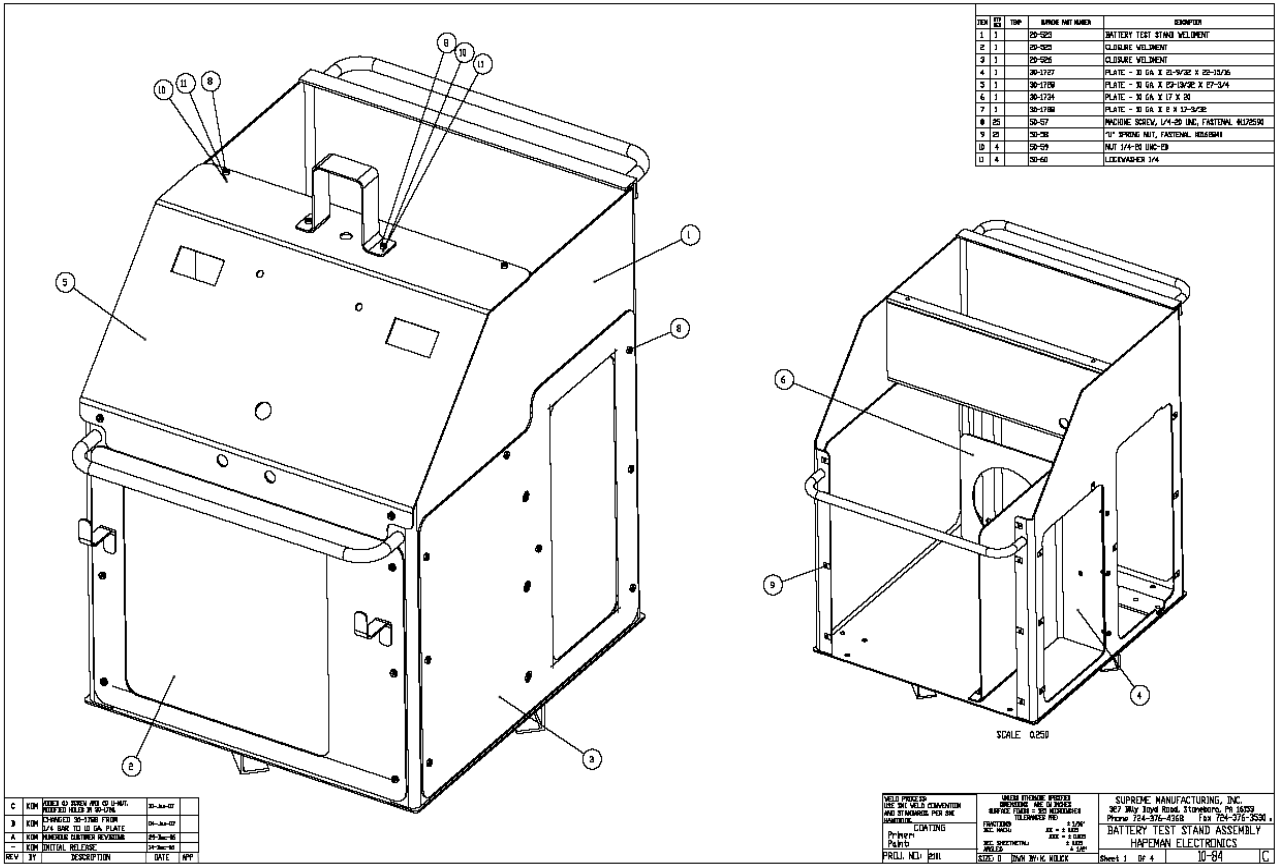
GE: 84D716146G1
Resistor Grid



HE280102
Warning Label



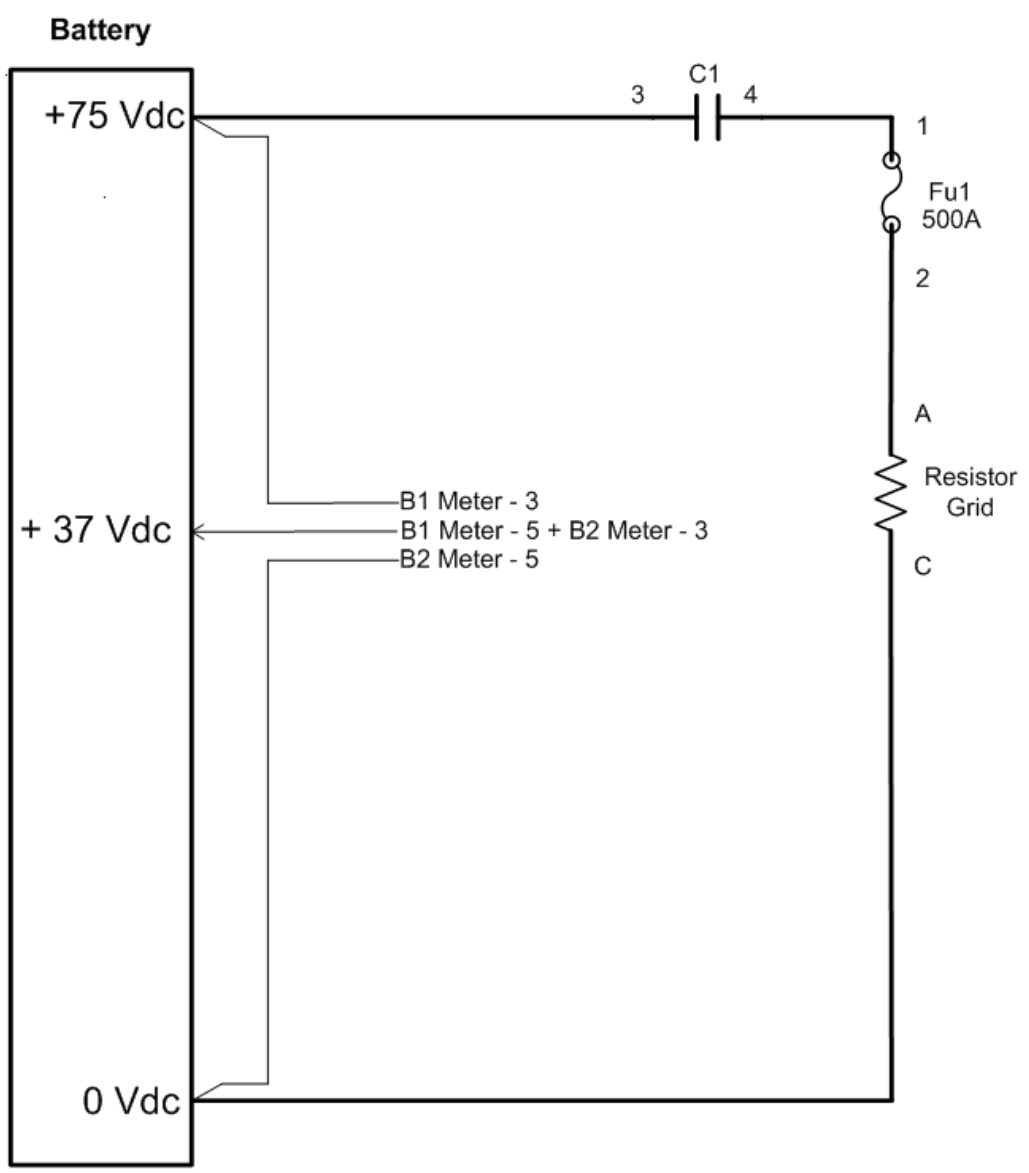
HE280101
Instruction Label



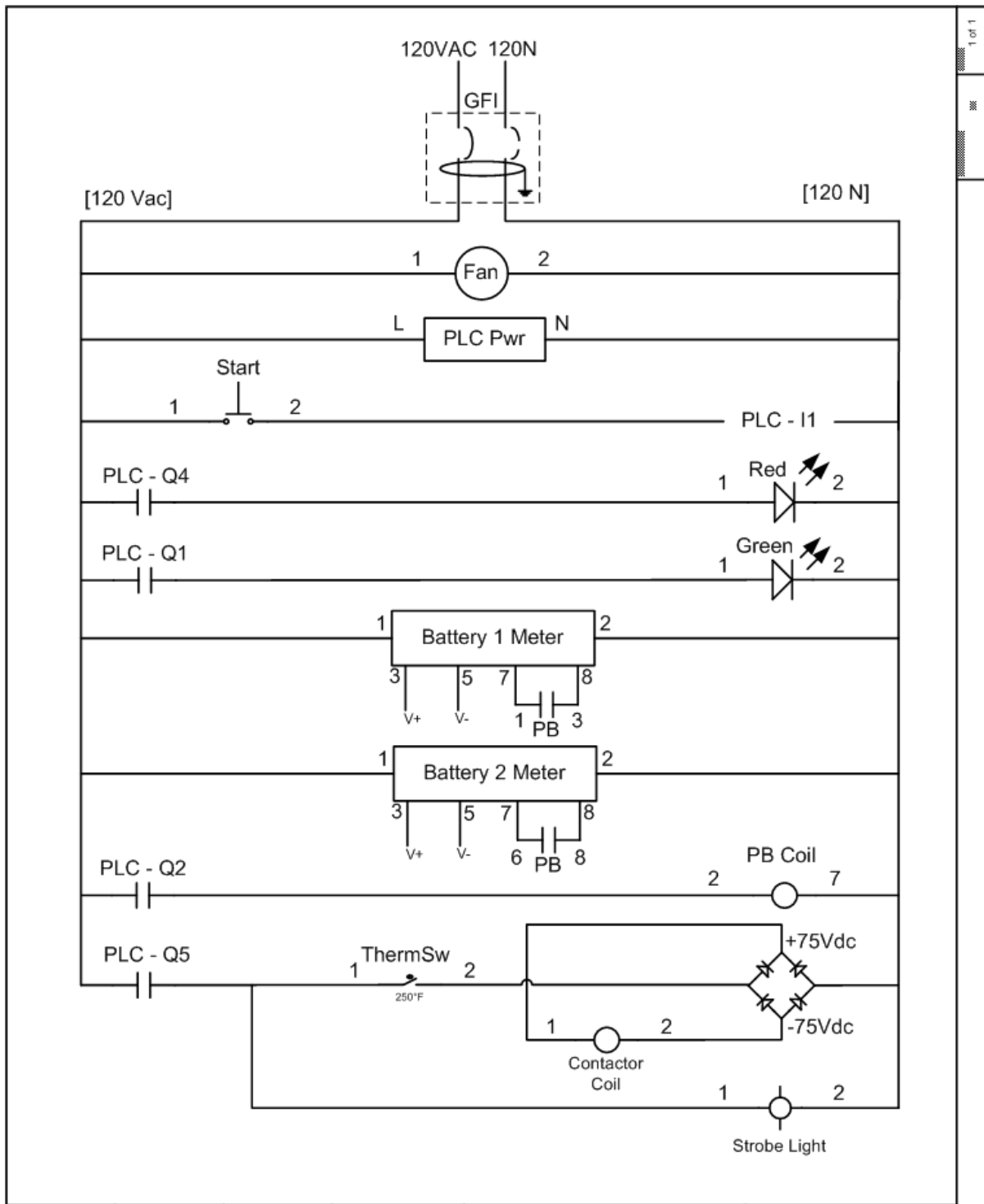
| ITEM | QTY | TYPE | UNLESS NOTED | DESCRIPTION |
|------|-----|---------|--------------|--|
| 1 | 1 | DP-020 | | BATTERY TEST STAND WELDMENT |
| 2 | 1 | DP-020 | | CLEARANCE WELDMENT |
| 3 | 1 | DP-020 | | CLEARANCE WELDMENT |
| 4 | 1 | DP-1727 | | PLATE - 30 GA X 12-1/2" X 22-1/2" |
| 5 | 1 | DP-1728 | | PLATE - 30 GA X 12-1/2" X 27-3/4" |
| 6 | 1 | DP-1724 | | PLATE - 30 GA X 17" X 21" |
| 7 | 1 | DP-1780 | | PLATE - 30 GA X 8" X 12-1/2" |
| 8 | 25 | DP-07 | | WASHER SCREW, 1/4"-20 UNC, FASTENAL W/250R |
| 9 | 25 | DP-08 | | "0" W/250R NUT, FASTENAL, HEADSM1 |
| 10 | 4 | DP-09 | | NUT 1/4"-20 W/250R |
| 11 | 4 | DP-06 | | LIECHARDER 1/4" |

| REV | BY | DESCRIPTION | DATE | APP |
|-----|-----|---|----------|-----|
| C | KRM | ISSUE TO BUREAU AND TO SUPPLIER | 05-24-67 | |
| B | KRM | REDESIGNED ASSEMBLY TO 30-020 | 05-24-67 | |
| A | KRM | DESIGNED TO 30-020 FROM 30-020 TO 30 GA PLATE | 05-24-67 | |
| - | KRM | REDESIGNED TO 30-020 FROM 30-020 TO 30 GA PLATE | 05-24-67 | |
| - | KRM | DESIGNED TO 30-020 FROM 30-020 TO 30 GA PLATE | 05-24-67 | |
| - | KRM | DESIGNED TO 30-020 FROM 30-020 TO 30 GA PLATE | 05-24-67 | |

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|---------------------------|--------------------|--|
| WELD PROCEED WITH WELDING | WELDING TO BE DONE | SUPRONE MANUFACTURING, INC. |
| USE OF WELDING | WELDING TO BE DONE | 387 1/2" Road Road, 21000000, PA 15129 |
| USE OF WELDING | WELDING TO BE DONE | Phone 354-354-5555 FAX 354-354-5555 |
| USE OF WELDING | WELDING TO BE DONE | BATTERY TEST STAND ASSEMBLY |
| USE OF WELDING | WELDING TO BE DONE | HAPPENMAN ELECTRONICS |
| USE OF WELDING | WELDING TO BE DONE | Sheet 1 of 4 10-64 |



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|---------------------|--|--|------------|---------------------|------------------------|-----|
| | | | Tom Hauser | HAPEMAN ELECTRONICS | Title: Power Schematic | |
| | | | 1/25/07 | | 28000 | 005 |
| Hapeman Electronics | | | - | | | |



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|----------------------------|--|------------|-------------------------|--|
| Hapeman Electronics | | Tom Hauser | Title: Ladder Schematic | |
| | | 1/25/07 | 28000 004 | |
| HAPEMAN ELECTRONICS | | | | |