

ICS-200B Service Manual

EVI, Inc.
Electric Vehicle Infrastructure, Inc.

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1. About This Document

1.1. Scope

A summary of how to access records and interprets the ICS-200 verbal diagnostics for the purpose of service. Information about what to do given certain failures and symptoms.

1.2. Comments

The service manuals intent is to lend a hand to maintenance personnel in diagnosing and repairing filed units. Also, to assist in establishing when a suspicious behavior is not a failure.

The ICS-200 includes an internal diagnostics data logging system which is maintained by the backup battery. Often times, problems can be determined by analyzing this data log.

2. Abbreviations and Terms

Like any market, the Electric Vehicle products have their own set of new terminology. Table 2-1 will help you understand some of the terms associated with Electric Vehicles and EVI's ICS-200 product series.

Table 2-1 List of Abbreviations and Terms

Abbreviation	Description
Charging Station	general term for the ICS-200 product, also EVSE, HBCD, or PCS
Conductive Coupling	A mechanical and electrical interconnecting scheme for the purpose of transferring electrical energy using conductive contacts which are physically mated
Contactor	A high power switching device similar to a relay. Its purpose is to provide control of EV cable energization.
Data Switch	Small device which connects to the ICS-200's FICS adapter port, used for ICS-200 data gathering
EV	Electric Vehicle
EVSE	Electric Vehicle Service Equipment, general term for the ICS-200 product, also HBCD, Charging Station or PCS
Excessive Pressure	A pulling force on the cable when experience by the system results in de-energization of the circuit conductors of the cable
FICS Adapter	Field Installation and Configuration System, a device which connects PC computer to the ICS-200
GFCI	Ground Fault Circuit Interrupter, a device which detects small amounts of ground current in an AC system and is capable of de-energizing the contactor if a threshold current is present
GFCI Coil	Ground Fault Coil, a toroid sensor through which the L1 and L2 conductors are routed, used to sense ground fault currents
HBCD	Home Based Connection Device, general term for the ICS-200 product, also EVSE, Charging Station or PCS
ICS-200	The product name for EVI's line of level 2 EVSE
Level 2	A power rating as defined by SAE-J1772 which specifies a maximum of 240VAC and 48Amps
LM	Load Management, a controlling mechanism by which the utility can govern when electric energy will be consumed by the EVSE
Magma	Software used in conjunction with the FICS Adapter for diagnostics and configuration of the ICS-200
PCB	Printed Circuit Board, the circuitry card inside of the ICS-200 which performs most of the EVSE functions
PCS	Power Control Station, general term for the ICS-200 product, also EVSE, Charging Station or HBCD
PET	Portable EVSE Tester, EVI test equipment used to verify EVSE functionality
Pilot Signal	A pulse width modulated signal used to communicate information between the EVSE and the EV

Abbreviation	Description
Pull-free	The mechanism by which a cable is allowed to disengage from a connection device when it experiences certain forces
SPS	Switching Power Supply, the electronics package inside of the ICS-200 which converts AC power to power for the printed circuit board
Venting Fan	A venting fan will be placed in enclosed installations where batteries which vent hazardous gases will be charged.
Verbal Announcer (VA)	Speech based on the concatenation of recorded words and phrases for the communication of system status

3. Service Equipment

Table 3-1 Required Equipment

- SAE wrench set or equivalent, Phillips head screwdriver, and T-15 & 27 Torx wrench
- Data Switch and blank data log sheets
- DMM, or Digital Multi-meter capable of measuring RMS AC Volts, DC Volts and resistance
- PET, Portable EVSE Tester, *available from EVI*
- Spare Parts Kit, *available from EVI*

Table 3-2 Extended Service Equipment

- FICS Adapter, Field Installation and Configuration System, *available from EVI*
- Laptop running Windows 95 or 3.11, 800x600 screen, 8MB, Free serial port
- Magma Software loaded onto laptop, *available from EVI or*
<http://www.evii.com>

4. Spare Parts Kit

Stock one set of the items listed in Table 4-1 for each 100 units installed in the field for optimum service capabilities.

Table 4-1 ICS-200-B, Spare Parts Kit

Item #	Qty per Unit	Mfgr P/N	Description	Value	Fill Order
1	1	200010-C-3	Assembly, PCB	PCB	1
2	1	STRAIN	Strain Detection Module	PCB	1
3	1	SQD8910DA53V09	Contactora, 220V, 50 amp	3 pole	1
4	1	MAP40-3003	Power Supply	40 watt	1
5	1	DC32WA	Speaker, waterproof, 3.5"	4 watt	1
6	1	CR2016	BATTERY, COIN	3V LITHIUM	1
7	3	31333003	Fuse, 3AG	3 amp	20
8	1	OA-50-QC	Thermostat	< 32deg F	1
9	14	RAD18277	Crimp Terminals, Q-C	1/4", fem	ASSORT
10	6	RAD2573	Crimp Terminals, Q-C	3/16", fem	ASSORT
11	2	1300G3	Slip Conn, w/pin, Red	75 amp	1
12	2	1300G4	Slip Conn, w/pin, Black	75 amp	1
13	2	1300G2	Slip Conn, w/pin, Green	75 amp	1
14	2	1395G4	Slip Conn, w/pin, Blue	15 amp	2
15	2	1395G5	Slip Conn, w/pin, Yellow	15 amp	2
16	2	1395G6	Slip Conn, w/pin, Orange	15 amp	2
17	2	1395G7	Slip Conn, w/pin, Gray	15 amp	2

Table 4-2 is included as a reference in case ICS-200-B mounting hardware is misplaced during servicing. Use this table as a guide when replacing nuts, bolts, washers, etc.

Table 4-2 Mounting Hardware ICS-200-B

Enclosure to Wall

- | | |
|--|-----------|
| A. 1/4 x 2 1/2" Long Hex Head Lag Screw Zinc | (Qty = 4) |
| B. 1/4" Seal Bonding Washer | (Qty = 4) |
| C. 3/4" Water Tight NEMA Fitting | (Qty = 1) |

Single Enclosure-to Post *

- | | |
|--------------------------------|-----------|
| A. Single Support Post Package | (Qty = 1) |
|--------------------------------|-----------|

Dual Enclosure to Post **

- | | |
|-----------------------------------|-----------|
| A. Single Support Post Package | (Qty = 1) |
| B. Dual Support Accessory Package | (Qty = 1) |

* Single Support Post Package

- | | |
|---|------------|
| A. Post with Base | (Qty = 1) |
| • 5/8-11 Hex Nut Zinc | (Qty = 8) |
| • 5/8 Washer | (Qty = 8) |
| B. Base Cover | (Qty = 2) |
| • #6-32 x 1/2" Flat Head Phillips Screw | (Qty = 4) |
| C. Mounting Plate | (Qty = 1) |
| D. Single Support Bracket | (Qty = 1) |
| E. Top Cap (Single has 3 flanges) | (Qty = 1) |
| F. 3/4" Conduit Assembly | (Qty = 1) |
| G. 1/4-20 x 1.0" Torx (T-27) Screw | (Qty = 10) |
| H. 1/4" Seal Bonding Washer | (Qty = 10) |
| I. 1-1/8" Plug | (Qty = 1) |

** Dual Support Accessory Package

- | | |
|------------------------------------|------------|
| A. Mounting Plate | (Qty = 1) |
| B. Dual Support Brackets | (Qty = 2) |
| C. Top Cap (Dual has 2 flanges) | (Qty = 1) |
| D. 3/4" Conduit Assembly | (Qty = 1) |
| E. 1/4-20 x 1.0" Torx (T-27) Screw | (Qty = 10) |
| F. 1/4" Seal Bonding Washer | (Qty = 10) |

5. Trouble Shooting

Table 5-1 are intended to help with determining which ICS-200 component may be malfunctioning in a failed unit. After establishing the possible source of problem, use the procedures in section 6 Inspecting Components to check component for failure.

- Step 1. Use **Trouble Shooting** section to focus on possible component failure
- Step 2. Use **Inspecting** section to verify the suspect component has failed

The ICS-200 has many features to help diagnose problems. However, to take advantage of these features it is necessary to:

LOOK, LISTEN, and GET the DATA LOG.

Often times, simply making a conscious effort to take note of what the unit is trying to say, will point directly to the problem area.

- Look at the FRONT panel, make note of which designators are lit
- If the unit is making an announcement, make note of exact message
- Press the STOP BUTTON, Listen to the announcement,

Table 5-1 Symptoms Based on Protection and Service for Trouble Shooting

Designator	Action	Announcement	Condition	Section Reference
Protection	Blinking		Ground Fault	5.1
Protection	Static	“Ground Fault Error Since <i>time</i> ”	Ground Fault	5.1
Protection	Static	“Please Reduce Cable Tension”	EV Cable Tension	5.9
Service	Static	“Ground Not Connected Since <i>time</i> ”	Service Ground Not Present	5.2
Service	Static	“Fan Failure Since <i>time</i> ”	Venting Fan Failure	5.4
Service	Static	“System Failure 00 Since <i>time</i> ”	Contactors Open	5.6
Service	Static	“System Failure 01 Since <i>time</i> ”	Contactors Closed	5.7
Service	Static	“System Failure 02 Since <i>time</i> ”	EV Cable Pulled Free	5.5
Service	Static	“System Failure 03 since <i>time</i> ”	Pilot +12V Circuitry	5.12
Service	Static	“System Failure 04 since <i>time</i> ”	Pilot 12V Circuitry	5.11
Service	Static	“System Failure 05 since <i>time</i> ”	Configuration Case 1	5.13
Service	Static	“System Failure 06 since <i>time</i> ”	GFCI Circuitry	5.14
Service	Static	“System Failure 07 since <i>time</i> ”	Contactors Driver	5.16
Service	Static	“System Failure 08 since <i>time</i> ”	RTC Not Counting	5.3
Service	Static	“Electric Vehicle Connection Fault Since <i>time</i> ”	Pilot Voltage Out Of Specifications	5.8
Rotating	always	No Activity After Service Power	Configuration Case 2	5.15
Any	any		System Not Responding	5.10

Table 5-2 Symptoms Based on Data Log for Trouble Shooting

Data Log	Condition	Section Reference
00	Contactors Stuck Open	5.6
01	Contactors Stuck Closed	5.7
02	Cable Pull Free	5.5
03	Pilot Positive 12V	5.12
04	Pilot Negative 12V	5.11
05	Configuration WDT	5.13
06	GFCI Circuitry	5.14
07	Dual Contactors Driver	5.16
08	RTC Not Counting	5.3
09	No WDT Resets	5.17
10	GFCI Trips	5.1
11	Pilot Dead Band	5.8
12	Venting Fan	5.4
13	EV Excessive Current	5.18
14	Service Ground Missing	5.2
15	Incorrect Time or Date	5.3

5.1. Ground Fault Error

The ground fault system is capable of automatic re-closure. The protection designator will blink and the EV cable will be de-energized during a ground fault condition. After the ICS-200 has attempted to re-start the charging cycle several times, it will cease re-closure and the designator will remain

statically lit. The announcer will then periodically repeat the error message, including the time of the first occurrence of the failure. The delivered units are configured to attempt re-closure 5 times with 15 minute intervals in-between.

Actions to Take

1. If there is a ground fault present on the EV, this is a normal operation
2. Use the PET to test the ICS-200's ground fault circuitry

Suspected Components

1. Ground Fault Coil
2. Black and White wires from the ground fault coil to the PCB connector
3. Circuitry on the PCB

5.2. Service Ground Not Preset

If the ground from the service panel is not present, and there are no other paths to earth ground, the system will cease charging and enter a service required failure mode. Conductive charging stations require a bonded ground as a primary means of providing personal safety. See the document *Proper Service Connection* in the service pack.

Actions to Take

1. 6.6 Inspection for Proper Ground

Suspected Components

1. Improper service connection
2. #8 Green bonding wire from the junction box into the internal ground block
3. Small green wires on the internal ground block

5.3. Real Time Clock Not Counting

The ICS-200 charging cycles are based on the internal clock, it must operate correctly for proper operation. The internal clock incorporates a battery backup capable of 10 years of non-powered operation.

Actions to Take

1. 6.5 Inspecting PCB

Suspected Components

1. Circuitry on the PCB

5.4. Venting Fan Failure

The ICS-200 incorporates circuitry for monitoring the proper operation of the venting fan. If the venting fan is required but not operating properly, the unit will disallow charging and enter this failure mode. The venting fan is powered from L1 and Neutral. The venting fan must be serviced.

Actions to Take

1. Use the PET to test the ICS-200's charging with FAN operation
2. When powered by the ICS-200, check the venting FAN

Suspected Components

1. Circuitry on the PCB
2. Improper wiring in the junction box
3. Improper or no Neutral wire from the service panel

5.5. EV Cable Pulled Free

The ICS-200 can detect when the EV cable has been pulled free from the unit. The unit will not operate until the cable is re-installed.

Actions to Take

1. Inspect the pull free plate for problems
2. Inspecting Anderson Connectors

Suspected Components

1. Circuitry on the PCB
2. The small GREY Anderson connector in the pull free mechanism

5.6. Contactor Open, Failure 00

The ICS-200 can detect when the EV connector is not energized when it should be. This condition is a result of a failed power contactor. The unit will not operate until the contactor is repaired.

Actions to Take

1. 6.1 Inspecting Fuses
2. 6.2 Inspecting Contactor

Suspected Components

1. Blown fuse
2. Disconnected or loose quick connect on the contactor
3. Contactor's energizing coil or contacts has gone bad
4. Circuitry on the PCB

5.7. Contactor Closed, Failure 01

The ICS-200 can detect when the EV connector is energized when it should not be. This condition is a result of a failed power contactor. The unit will not operate until the contactor is repaired.

Actions to Take

1. 6.1 Inspecting Fuses
2. 6.2 Inspecting Contactor

Suspected Components

1. Blown fuse
2. Disconnected or loose quick connect on the contactor
3. Contactor's energizing coil or contacts has gone bad
4. Circuitry on the PCB

5.8. Electric Vehicle Connection Fault

The ICS-200 can detect when the EV is manipulating the pilot incorrectly. This condition is a result of a failed ICS-200 pilot driver circuit, connection, or EV pilot circuitry. Inspect the connector and try to re-enter a charging cycle.

Actions to Take

1. Inspect the EV's inlet for debris
2. Inspect the EVSE connector for debris
3. Inspecting Anderson Connectors
4. Use the PET to test the ICS-200

Suspected Components

1. The small BLUE Anderson connector in the pull free mechanism
2. Circuitry on the PCB

5.9. EV Cable Tension

It is important not to pull too hard on the EV cable. The ICS-200 is equipped with a pull-free system which allows the EV cable to come out of the unit under conditions which may cause damage to the EV or the ICS-200. Release tension on the EV cable.

Actions to Take

1. Inspect the cable for inadvertent sources of strain
2. Inspect the Excessive Strain PCB's optical sensors for debris
3. Inspect the pull free plate for problems

Suspected Components

1. Excessive Strain PCB
2. Loose or broken wires on the Excessive Strain PCB
3. Circuitry on the Main PCB

5.10. System Not Responding

In the unlikely event the ICS-200 were to discontinue responding at all, power the system down using the circuit breaker for 10 seconds, then re-apply power. The ICS-200 incorporates circuitry that maintains a condition of safety even if the internal CPU were to malfunction.

Actions to Take

1. Press the STOP button and check for announcement
2. Check for service power to the junction box
3. 6.1 Inspecting Fuses
4. 6.3 Inspecting Power Supply
5. 6.5 Inspecting PCB

Suspected Components

1. No power from service
2. Power supply failed
3. No connection to front panel
4. Circuitry on the Main PCB

5.11. Pilot +12V Circuitry, Failure 03

The ICS-200 can detect when the EV pilot signal positive voltage sensing circuitry is not functioning correctly. The unit will not operate until the circuitry is repaired.

Actions to Take

1. Use the PET to test the ICS-200
2. Inspecting Anderson Connectors

Suspected Components

1. The small BLUE Anderson connector in the pull free mechanism
2. Short in the wiring harness
3. Circuitry on the Main PCB

5.12. Pilot -12V Circuitry, Failure 04

The ICS-200 can detect when the EV pilot signal negative voltage sensing circuitry is not functioning correctly. The unit will not operate until the circuitry is repaired.

Actions to Take

1. Use the PET to test the ICS-200
2. Inspecting Anderson Connectors

Suspected Components

1. The small BLUE Anderson connector in the pull free mechanism
2. Short in the wiring harness
3. Circuitry on the Main PCB

5.13. Configuration Case 1, Failure 05

The ICS-200 requires certain internal programmable registers to be set to the correct values. If the values are incorrect, they will be re-programmed automatically. This condition is only a problem if it persists.

Actions to Take

1. 6.5 Inspecting PCB

Suspected Components

1. Circuitry on the Main PCB

5.14. GFCI Circuitry, Failure 06

The ICS-200 can detect when the ground fault sensing circuitry is not functioning correctly. The unit will not operate until the circuitry is repaired. This circuitry is used each time the EV is connected.

Actions to Take

1. Use the PET to test the ICS-200's ground fault circuitry

Suspected Components

1. Ground Fault Coil
2. Black and White wires from the ground fault coil to the PCB connector
3. Green wire from the PCB connector through the GFCI coil to the internal grounding block
4. Circuitry on the PCB

5.15. Configuration Case 2

The ICS-200 has 4 programmable sub-systems; Embedded Software, On-site and Load Management, Factory, and Voice Data Bank. When the service power is applied to the system, these 4 memories will be checked for integrity and compatibility. If this failure occurs, it is most likely the ICS-200 has been programmed incorrectly. If the unit has not been recently programmed, the system must be repaired.

Actions to Take

1. 6.5 Inspecting PCB
2. Re-program the unit using Magma

Suspected Components

1. Circuitry on the Main PCB

5.16. Contactor Driver, Failure 07

The ICS-200 can detect when the EV connector is energized when it should not be. This condition is a result of a failed driver circuitry. The unit will not operate until the contactor is repaired.

Actions to Take

1. 6.5 Inspecting PCB
2. 6.2 Inspecting Contactor

Suspected Components

1. Circuitry on the Main PCB
2. Contactor's energizing coil or contacts has gone bad

5.17. No WDT Trips

The ICS-200 can detect when its either of its two CPU monitoring circuits has failed. The unit will not operate until the contactor is repaired.

Actions to Take

1. 6.5 Inspecting PCB

Suspected Components

1. Circuitry on the Main PCB

5.18. Excessive EV Current

The ICS-200 can detect when the EV is drawing more current than the branch circuit is configured to handle. This safety feature is programmable using Magma. This condition is only a problem if it persists.

Actions to Take

1. 6.5 Inspecting PCB
2. Check the EV current coil, a small toroid which has the red L1 passing through it

Suspected Components

1. Circuitry on the Main PCB

6. Inspecting Components

Table 5-1 is intended to help with determining which ICS-200 component may be malfunctioning in a failed unit. After establishing the possible source of problem, use the procedures in section 6 Inspecting Components to check component for failure.

- Step 1. Use **Trouble Shooting** section to focus on possible component failure
- Step 2. Use **Inspecting** section to verify the suspect component has failed

6.1. Inspecting Fuses

1. Turn off the power to the unit at the circuit breaker
2. Open the enclosure as described in section 8.1
3. Check the fuses by gently pulling on them
4. Use a DMM measure the resistance of each FUSE
5. All fuses should read about 0 ohms of resistance
6. Replace any fuses which are blown

6.2. Inspecting Contactor

1. Turn off the power to the unit at the circuit breaker
2. Open the enclosure as described in section 8.1
3. Check the quick connects and wires connected to the contactor by gently pulling on them
4. Turn on the power to the unit at the circuit breaker
5. Use the DMM to measure the voltage on the contactors energizing coil across the 2 yellow wires
6. When the contactor is off, this should read about 0 VAC
7. When the contactor is on, this should read over 200 VAC
8. Turn on the power to the unit at the circuit breaker
9. Use the DMM to measure the voltage on the contactors input
10. Measure across the Red and Black number #8 coming from the conduit
11. This should always read 200 VAC
12. Use the PET or EV to put the ICS-200 into the charging mode
13. Listen to hear the contactor close
14. Use the DMM to measure the voltage on the contactors output
15. Measure across the Red and Black number #8 going to the Anderson connectors
16. When the contactor is off, this should read about 0 VAC
17. When the contactor is on, this should read over 200 VAC

6.3. Inspecting Power Supply

1. Refer to Figure 8-5
2. Open the enclosure as described in section 8.1
3. Use the DMM to measure the AC voltage on the Power Supply's input
4. Measure across the two black wires
5. This should read over 200 VAC
6. Use the DMM to measure the DC voltage on the Power Supply's output, to chassis ground
7. The following measurements should be read:

From	To	Approximate DC Voltage
Orange	Black	+15 VDC
White	Black	-15 VDC
Red	Black	+5 VDC
Red	Black	+5 VDC

6.4. Inspecting Anderson Connectors

1. Turn off the power to the unit at the circuit breaker
2. Open the enclosure as described in section 8.1
3. Make sure the Anderson connectors are firmly seated
4. Check for matching colors
5. Anderson internal contacts may come loose
6. Check the internal contacts by gently pulling the wires
7. Check the internal contacts by gently pushing the wires into the plastic holders
8. It is possible for the contact crimps to fail
9. Check for failed contacts by measuring the resistance from inside the connector to the other end of the wire, wherever it lands

6.5. Inspecting PCB

1. Open the enclosure as described in section 8.1
2. Look for the "heart beat", a blinking read light at the bottom of the PCBG
3. Turn off the power to the unit at the circuit breaker
4. Make sure the PCB is firmly seated into the connector
5. Inspect the PCB for physical damage, such as blown up parts or debris

6.6. Inspection for Proper Ground

1. Open the junction box
2. The following measurements should be read:

From	To	Approximate AC RMS Voltage
L1	L2	208 to 240VAC
L1	Ground	120VAC
L2	Ground	120VAC
L1	Neutral (if used)	120VAC
L2	Neutral (if used)	120VAC
Ground	Neutral (if used)	Less than 15VAC

7. Programming New PCB Using Magma

When a new PCB is installed in an ICS-200-B, it must be programmed to the configuration of the previously installed PCB. It is necessary to use Magma and the FICS adapter to accomplish this task.

As is often the case, a failed PCB will still communicate properly with the Magma software. In this case, use the steps outlined in Table 7-1.

If a failed board will not respond at all to the Magma software, use the steps outlined in Table 7-2.

Table 7-1 Installing a New PCB

1. Before removing failed PCB
2. From Magma, go to File -> Download Parameters From ICS...
3. Check all three Paramsets
4. Click on Download
5. Wait for download to complete, this takes about 1 minute
6. Now, Magma holds the configuration of the original PCB
7. Save the configuration into a file
8. Select File -> Save As ...
9. Choose a file name, and do not forget it
10. Change the PCB as described in section 8.2
11. Load the saved configuration
12. Select File -> Open ...
13. Choose the file name from step 9 then click on OK
14. Select File -> Upload Parameters To ICS
15. Check the three Paramsets, OSLM, Factory, and NVRAM
16. Click on Upload
17. Wait for upload to complete, this takes about 2 minutes

Table 7-2 Installing a New PCB if the Old One Does Not Work

1. Change the PCB as described in section 8.2
2. Load the configuration
3. Select File -> Open ...
4. Choose the file name based on the EVI part number desired
5. Select File -> Upload Parameters To ICS ...
6. Check the three Paramsets, OSLM, Factory, and NVRAM
7. Click on Upload
8. Wait for upload to complete, this takes about 2 minutes

8. Replacing Components

8.1. Opening the Enclosure

1. Remove and retain (2) ¼-15 Torx left side, Figure 8-1
2. Swing box open by pulling on the left side
3. When replacing screws on the door, DO NOT OVER-TIGHTEN

Figure 8-1 Opening Service Door

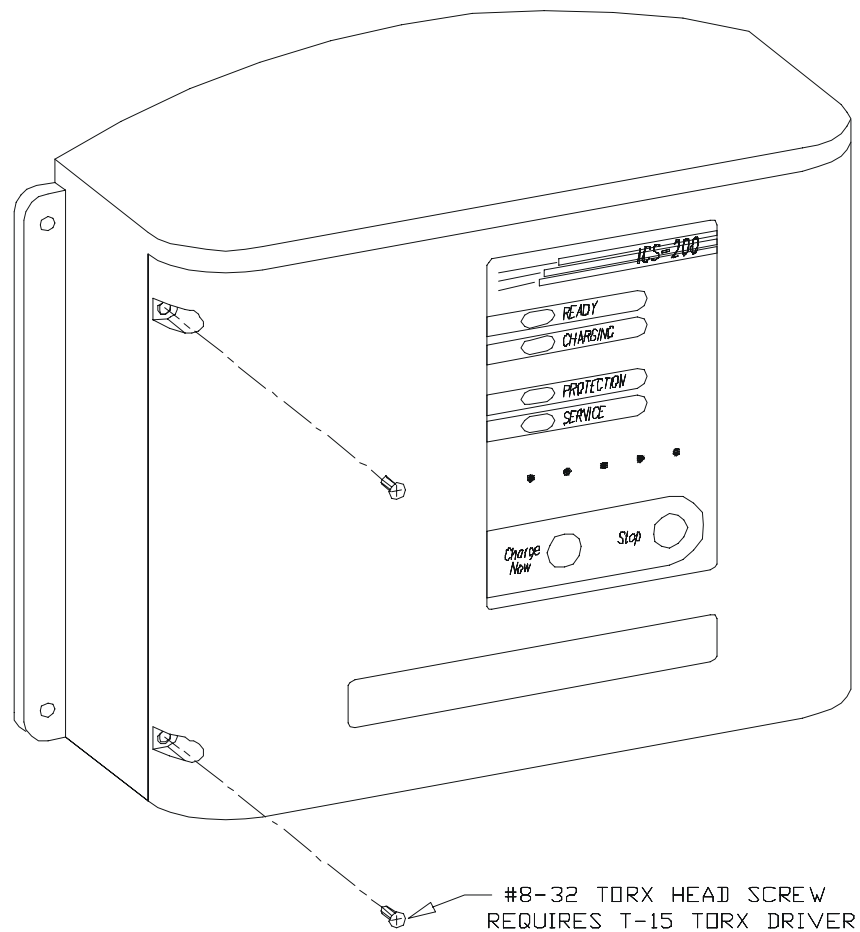
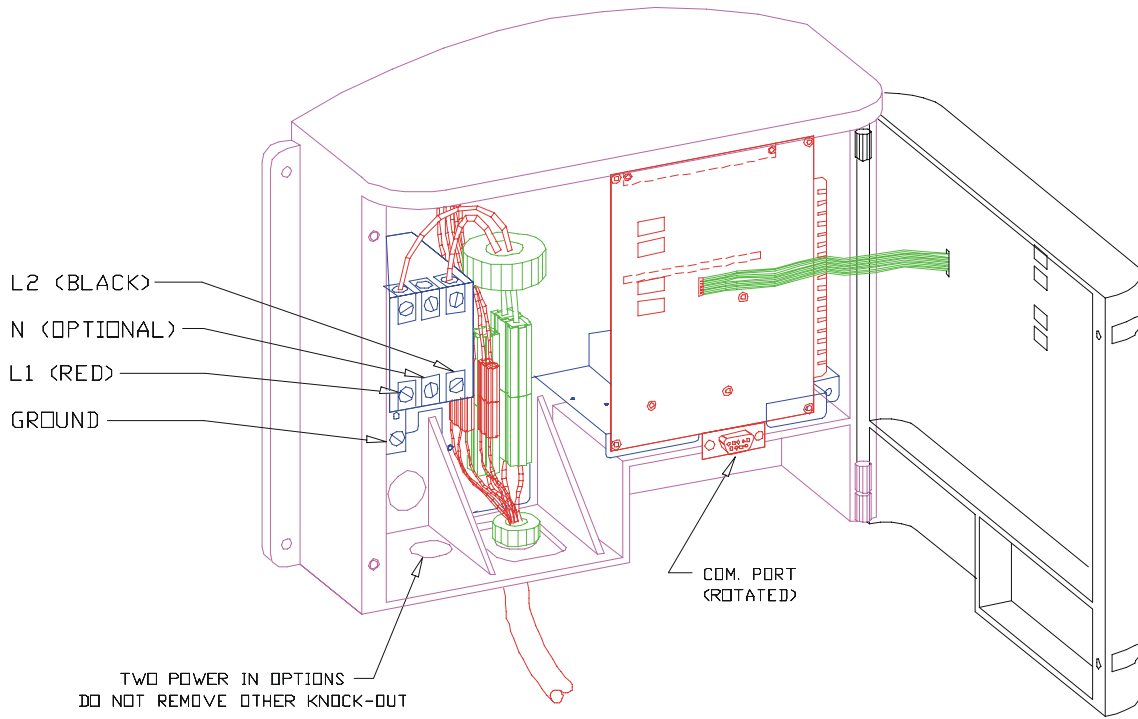


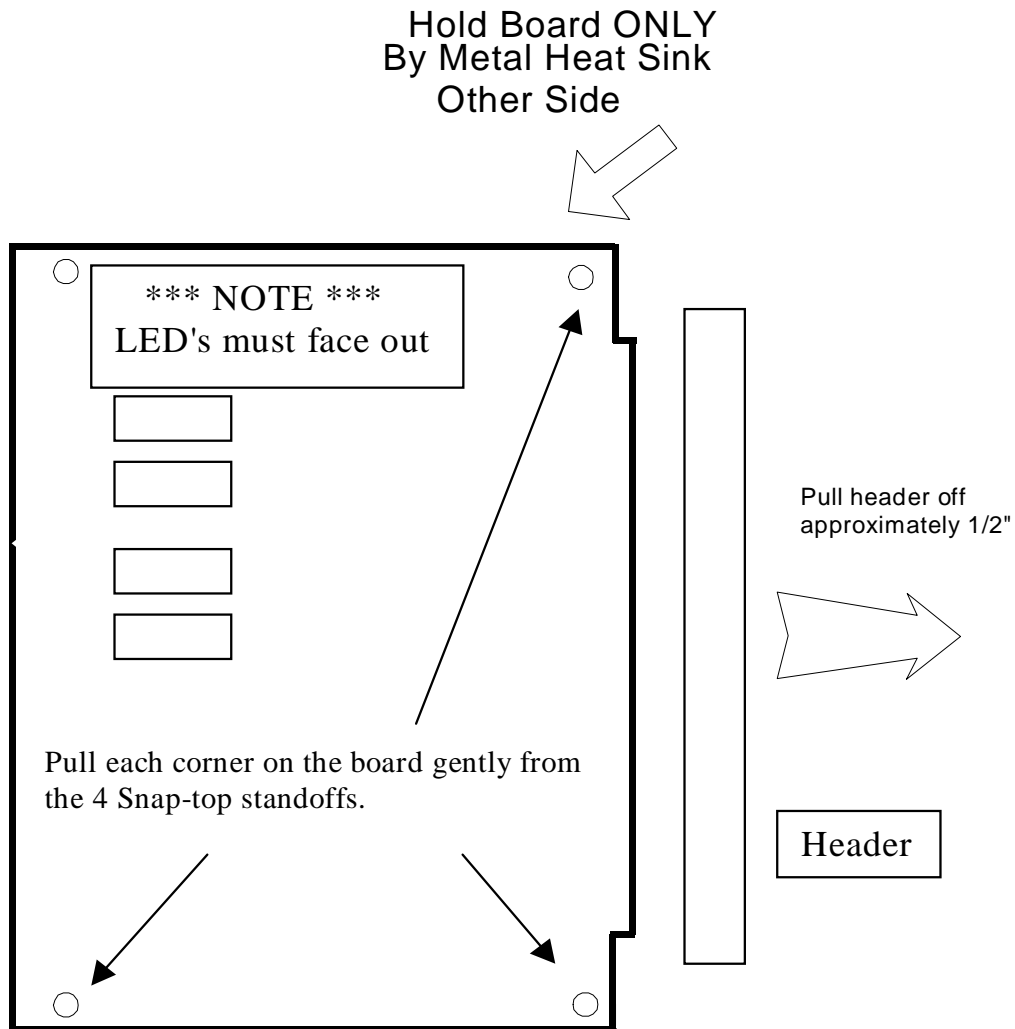
Figure 8-2 Opening Service Panel



8.2. Printed Circuit Board

1. Turn circuit breaker off, verify no power is applied
2. Open the enclosure as described in section 8.1
3. Pull each corner of the PC board gently off the 4 Snap-top standoffs.
4. Pull PCB off the header approximately a ½ inch, this will pull it away from connector
5. Pull PCB out, holding by the metal heat sink on top
6. Remove Push Button connector cable from back side of board
7. When replacing, pop back on posts
8. When replacing, REMEMBER TO CONNECT Push Button connector cable on back side of board
9. New PCB's **MUST BE PROGRAMMED** with a new configuration, see section 7

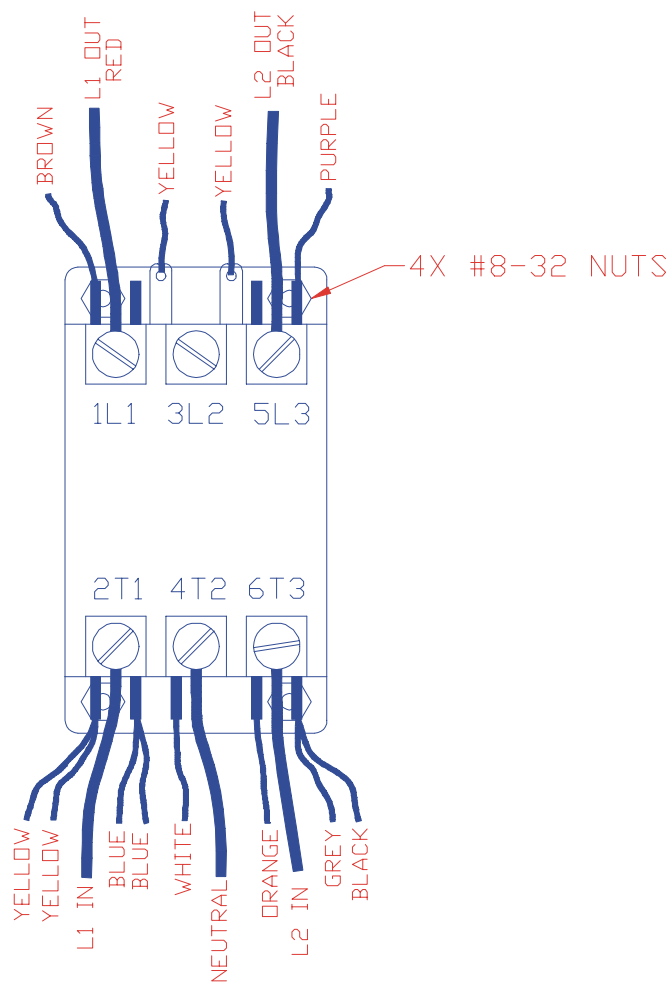
Figure 8-3 Removing PCB



8.3. Contactor

1. Turn circuit breaker off, verify no power is applied
2. Open the enclosure as described in section 8.1
3. Carefully observe the placement of wires, illustrated in Figure 8-4
4. Remove the #8 power wiring first
5. Remove the quick connects, DO NOT GRIP BY THE WIRES
6. Remove and retain (4) #8-32 nuts
7. When replacing the contactor, carefully observe the placement of wires

Figure 8-4 Wiring Connections for Contactor



8.4. Power Supply Replacement

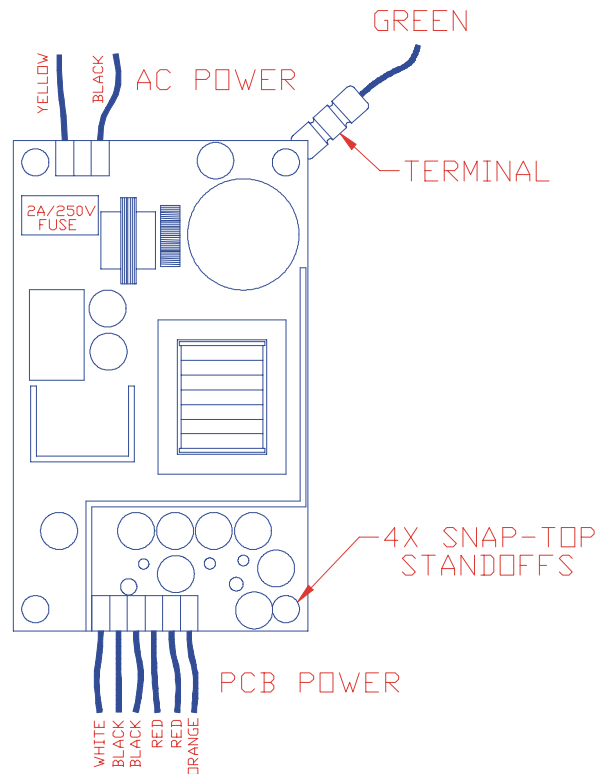
1. Turn circuit breaker off, verify no power is applied
2. Open the enclosure as described in section 8.1
3. Remove the two connectors, AC Power and PCB Power
4. Remove power supply from the snap-top stand-offs posts.
5. When replacing the power supply, make sure the **green terminal is BETWEEN** the power supply and the metal mounting post

ONLY replace power supply with compatible type. Use Table 8-1 to determine if the replacement power supply is compatible with the ICS-200-B wiring harness. Currently, there are two groups of compatible power supplies used in the ICS-200-B. If the replacement power supply is in the same group as the original power supply, then they are compatible.

Table 8-1 Power Supply Compatible

Part Number	Manufacturer	Use
MAP40-3003	Power One	common

Figure 8-5 Power Supply Connections



9. Using the Data Switch

Before attempting to collect the data log using the Data Switch, it is important that copies of the EVI Data Log Sheet in section 10 are available for recording the announced information on.

9.1. Initiating the Data Log Announcement

The data switch is used to gather ICS-200 event and usage information.

Table 9-1 Starting the Data Log

1. Insert the Data Switch into the FICS port, located inside on the PC board
2. Press and HOLD the Data Switch button
3. Press and HOLD the Start and Stop button
4. Release the Data Switch button
5. Continue to HOLD the Start and Stop buttons until unit begins to speak
6. As soon as “kilo-watt-hours” is spoken, release the Start and Stop buttons
7. Record spoken information into the EVI Data Log Sheet

9.2. Recording the Data Log

The data log announcement will follow the form listed in section 10. In each place where the sheet is blank, there ICS-200 will speak a number. Write the numbers down as they are spoken.

Note that the numbers which are longer than 2 digits are spoken in-groups of two digits. For example, the number “12345” will actually be spoken as “01”, “23”, “45”. Simply record the groups of 2 digits as they are heard and make sense of the numbers after the data log is done.

9.3. Clearing the Data Log

After announcement of the durability constraints and error log, “Press stop to cancel set failure to zero” will be announced.

Press the STOP button to continue normal operation without clearing the error log.

Press CHARGE NOW to continue. “Press stop to cancel set failure to zero” will be announcement again. Press STOP to abort. Press CHARGE NOW again to clear the error log.

The durability constraint counts cannot be cleared from the front panel.

10.EV Data Log Sheet

Use the following tables to record the error information from the ICS-200.

Table 10-1 First Message Sequence

Durability Constraint	Count
“kilo-watt hours”	
“connection”	
“charged”	
“reduce cable tension”	

Table 10-2 Second Message Sequence

	Failure Number		Count		Month	Day	Year
“failure”		“is”		“at”			
“failure”		“is”		“at”			
“failure”		“is”		“at”			
“failure”		“is”		“at”			
“failure”		“is”		“at”			
“failure”		“is”		“at”			
“failure”		“is”		“at”			
“failure”		“is”		“at”			
“failure”		“is”		“at”			
“failure”		“is”		“at”			
“failure”		“is”		“at”			
“failure”		“is”		“at”			
“failure”		“is”		“at”			
“failure”		“is”		“at”			
“failure”		“is”		“at”			
“failure”		“is”		“at”			

To Clear The Log

1. “*Press stop to cancel set failure to zero*” announced.
2. Press the STOP button to continue normal operation without clearing the error log.
3. Press CHARGE NOW to continue.
4. “*Press stop to cancel set failure to zero*” will be announcement again.
5. Press STOP to abort.
6. Press CHARGE NOW again to clear the error log.