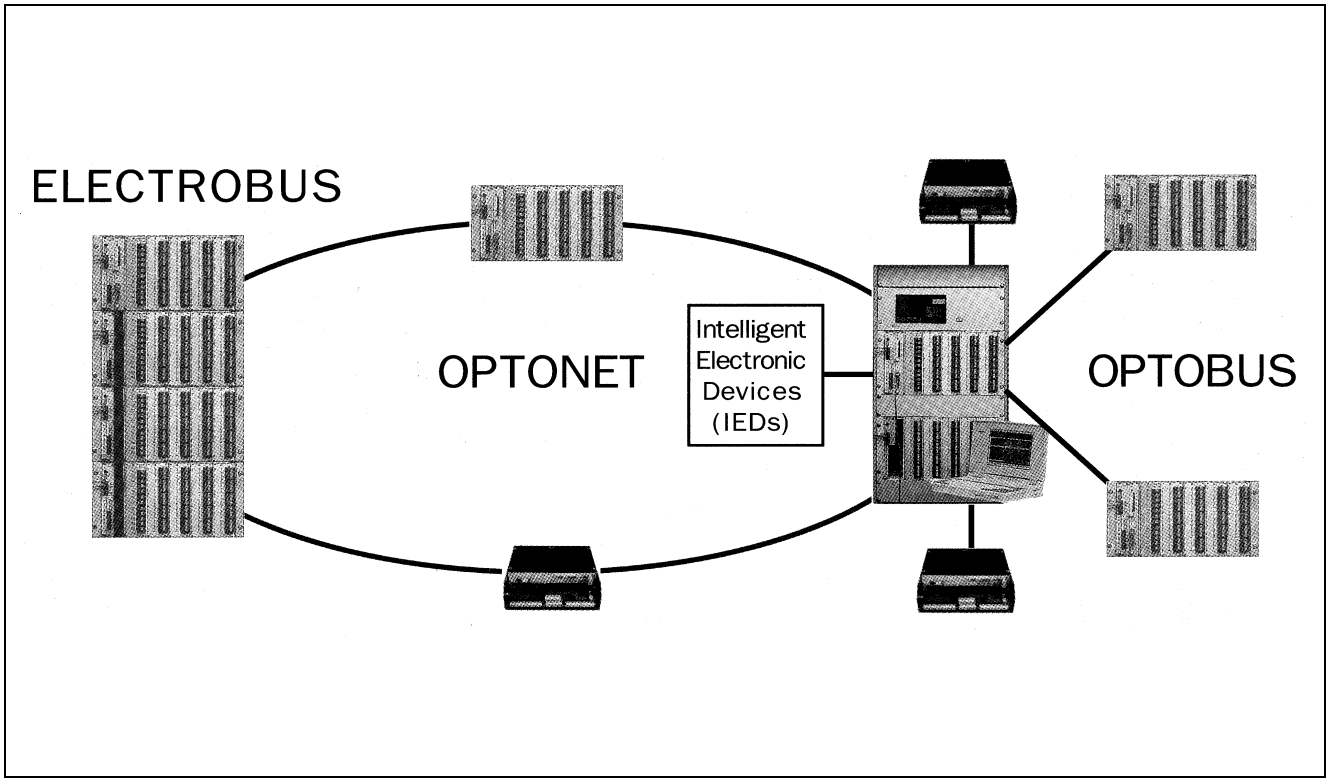
FOXBORO®

PSS 21H-8A3 B4

I/A Series® Remote Terminal Unit (RTU)
C50 RTU Installation and Commissioning



The C50 RTU system is supplied at various levels of readiness and is sized and configured to meet individual customer requirements.

FEATURES

- Modules have removable terminals with wiring terminated at the front panel, enabling circuit testing and module replacement, without disturbing the wiring.
- Modules are easily configured and tested using the Tool Utility Software operating on a PC.
- Modules can be supplied with a test configuration installed.
- Technical manuals can be supplied with custom documentation for individual projects.

Shipping Options

The RTU can be supplied as a complete unit or by component.

When the RTU is shipped as a complete unit, the wiring is done in the factory before shipment. When the RTU is purchased by component, it is configured on site by resident engineers.

If the RTU is comprised of two or more cabinets, the cabinets can either be shipped separately or bolted together.

Unless otherwise specified, cabinets that are bolted together will have factory fitted cables. Cabinets shipped separately come with pre-tagged cables for completing connections.

Description

The C50 RTU is supplied to meet individual requirements at various stages of readiness, ranging from a card file to be installed in existing cabinets, up to a complete unit. Refer to the Figures 1 through 3 for connection details.

The complete unit is comprised of up to four card files in each side of a cabinet. Each file contains up to six modules in a standard cabinet, with the top file containing a communications module and the Master Processor Module. Subsequent files within the cabinet are connected using Electrobus extenders or using the Optobus configuration.

Each module has a connector that plugs directly into the Electrobus backplane and is secured by screws, making the unit substantially vibration proof. Wiring is normally run through cable ducting within the cabinet.

The C50CP (Condensed Package) is small enough to fit behind a control panel or circuit breaker panel and is used when I/O requirements are minimal and space is limited.

Step One: C50 RTU Unpacking and Setting Up

The C50 RTU comes packaged in one or more enclosures and normally all components are mounted before shipment.

On arrival:

1. Inspect each cabinet and notify the carrier immediately if there is evidence of any damage during shipment.
2. Remove all shipping ties, clamps and packing material.
3. Check the cards in each card file to ensure that the retaining screws are tight.
4. Check all cable connectors to ensure they did not come loose during shipping.

CAUTION

Electrostatic discharge can severely damage integrated circuits. When handling electronic modules, always wear an electrostatic discharge (ESD) wrist grounding strap.

5. Refer to the custom configuration diagram and assembly list of parts to verify that the correct card complement is fitted into the correct slots for the RTUs supplied to complete the unit.
6. For C50 equipment supplied separately, check that all card setup links are as shown in the custom documentation and that the Power Supply Modules are correct for the input voltage supply.

Step Two: Checking the Wiring

1. If the card frames do not come with modules already installed in the cabinets, check that the correct Power Supply Module is used to suit the power source being used.
2. Connect the provided earth stud to a good safety ground point. The safety point can be any of the following:
   - Local ground bus
   - Ground rod
   - Building steel

   Earth wiring should consist of green stranded wire that meets local size specifications.
3. Connect the power supply to the RTU from the front of the Power Supply Module. To ensure isolation of the power supply before wiring, connect dc positive with RED wire and dc negative with BLACK wire. To prevent excessive voltage, drop use standard wiring sizes. If applicable, connect the optical links to Optobus Master and Slave or OptoNet Modules.
4. Using the Custom Wiring documentation, connect all INPUT/OUTPUT wiring to the I/O modules.
   - Use twisted pairs for inputs in which two wires per input are provided (e.g., analog).
   - If shielded wires are used, a shield terminal is provided on the terminal strip. Shielded inputs are required only if wiring is run through electrically noisy environments and normally for analog inputs only.
   - Leave all links open until point-to-point testing is done. Close each link after it's particular I/O function has been checked, then check the field operation.

Step Three: Performing Initial Checks and Adjustments

This section explains the four steps for performing the initial setup of the RTU.

Checking Power Supply

1. Apply power and turn on the RTU power supply.
2. Turn on the field interrogation supply and check the voltage at a suitable terminal board. If the power supply voltages are correct, the Master Processor Module RUN indicator should be green.

RTUs are normally shipped configured correctly, with all the configuration data stored on the flash card. If configuration information is not supplied, a test configuration is installed. The Configurator software can be used to configure the RTU to correct specifications.

Checking with Tool Utility Software

If Tool Utility Software is not available, proceed to the next section.

RTUs are normally shipped configured correctly, with all configuration data stored as firmware on the flash card. The C50 Tool Package allows a technician using a laptop computer to interrogate, check and control the RTU operation.

The **Master Processor Sense** switch is a momentary action switch that is used to modify the action of RTU firmware.

- If pressed down towards **RST**, the RTU resets.
- If lifted up towards **SEN** during initialization, the RTU by-passes initialization and remains in Bootstrap mode. The Tool Utility Software can then be used to assist with troubleshooting. After operating the SENSE switch, the RTU firmware runs, but the RTU remains in a failed state. Data in the Scan Buffer is not updated and Tool Utility Software operations are possible.
- If during normal operations an error code is detected by the self-test, the **RUN/FAIL** indicator lamp of the Master Processor Module shows red. If the error disappears, the warning lamp remains illuminated until the **SENSE** switch is pressed, to ensure that the operator is informed of the reported error condition.

Checking without Tool Utility Software

Normal operation of the RTU includes self-checking of various hardware and checking for correct responses from all input modules when scanned. If a Tool Utility Software is not available, observe the following items:

- Processor error lamps are off.
- Processor Run lamp is green.
- Power Supply Module green **OK** lamps are on.
- All I/O cards in scan groups are showing regular accessing by the circuit select lamps on the front panels, at the correct intervals according to type:
  - Analog - sec
  - Digital - ms
  - SOE - ms

Arrange for messages to be sent to the RTU, interrogating the various scan groups and operating control outputs. Operation of the V.23 Communications system is observed by watching the Transmit/Receive indicator lamps on the communications module.

Point-to-Point Check

A complete check can be made from the Master Station or using the TOOL utility software.

- Check all points with links to customer wiring open:
  - For inputs, manually close each input point in turn and check the result.
  - For outputs, operate all control outputs and check the operation of the correct output relay or setpoint/analog output.

After the confirmation of all points, the links to customer wiring can be closed and the operation checked with customer contacts and relays. This ensures that all wiring and I/O points have been checked from the field devices back to the Master Station before placing the RTU in operation.

TYPICAL CONNECTION DETAILS

Figure 1 represents a typical connection scheme for a C50 RTU.

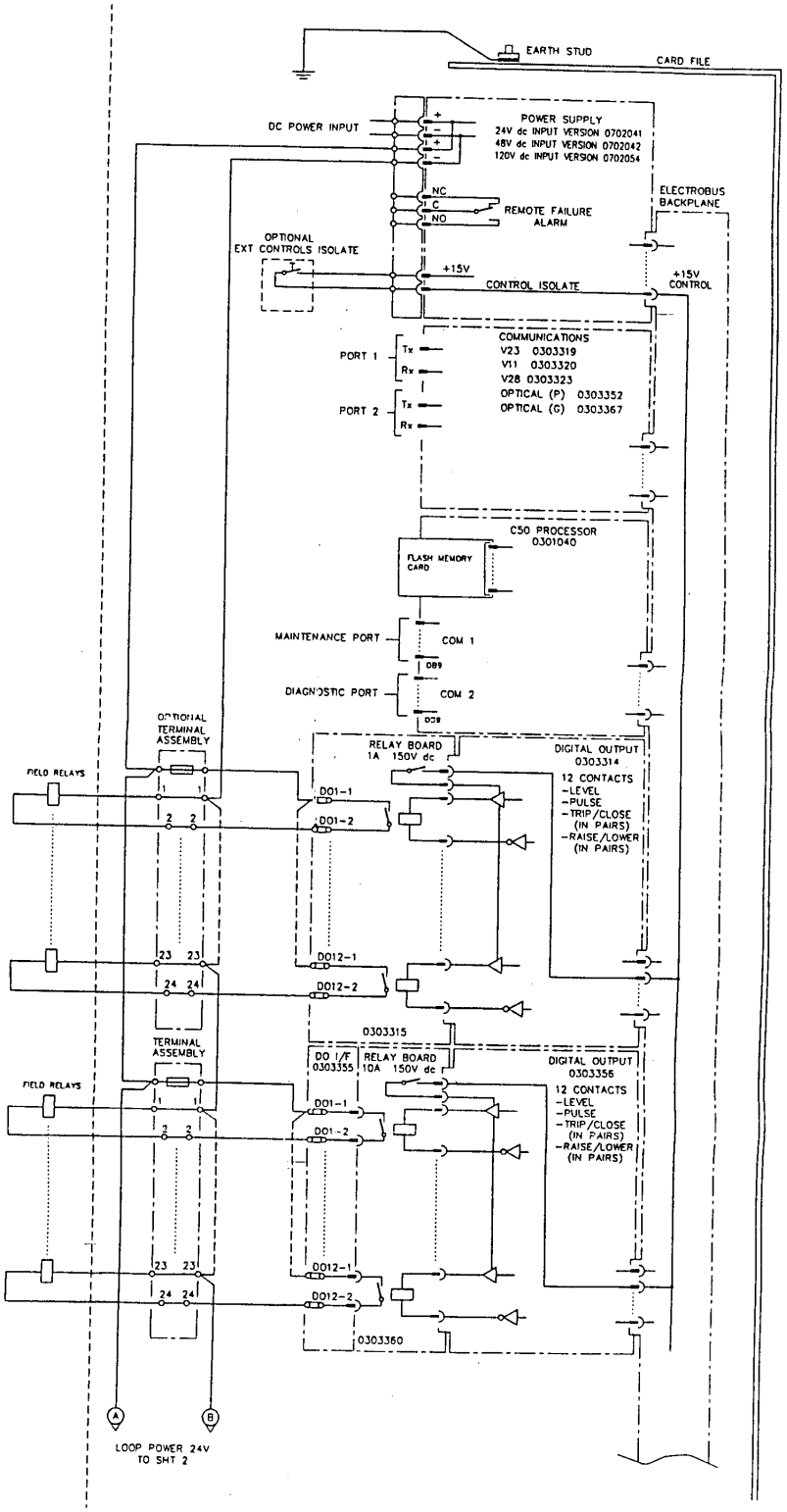


Figure 1. C50 RTU Typical Connection Diagram

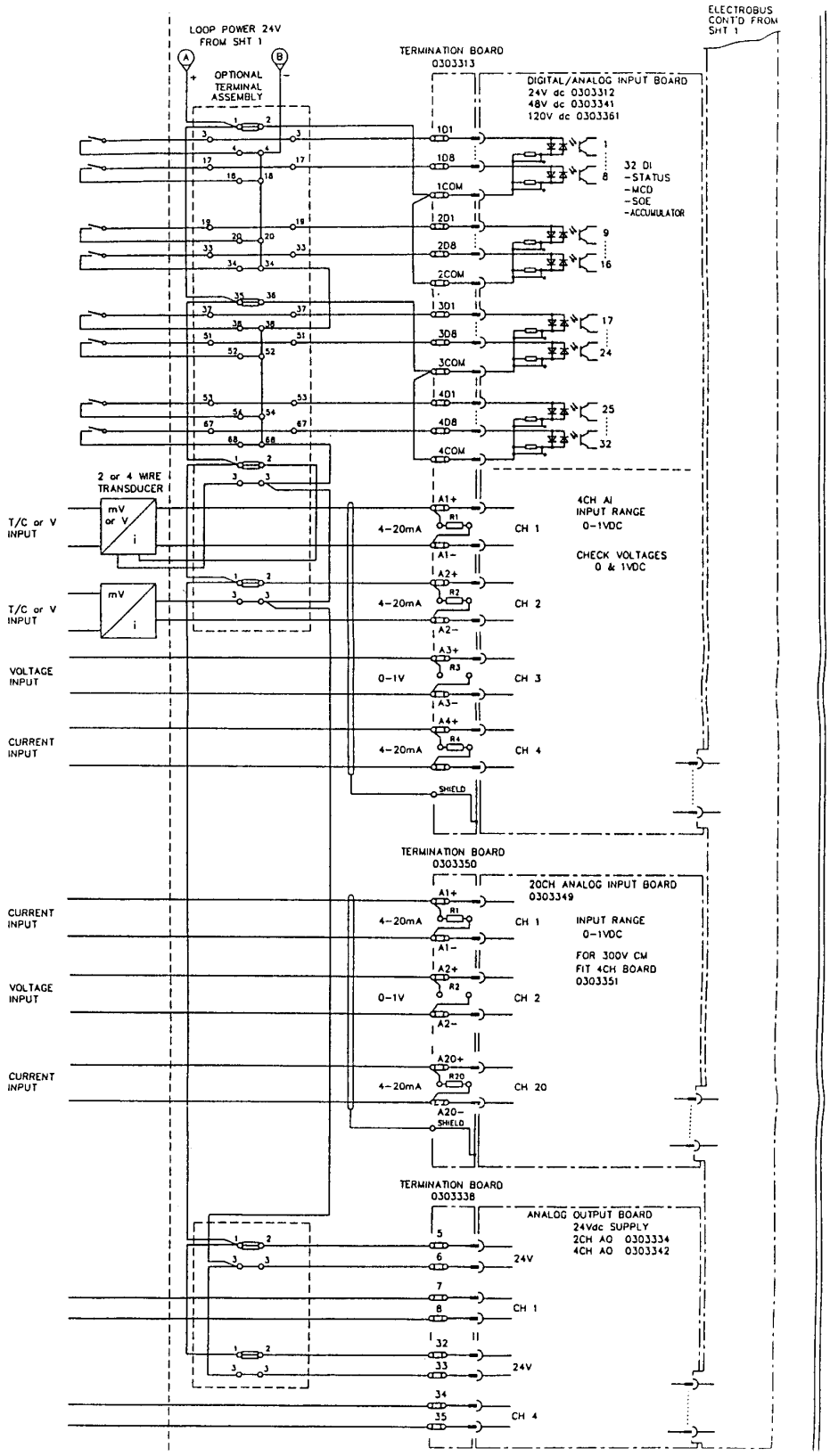


Figure 1. C50 RTU Typical Connection Diagram (Cont.)

Figures 2 and 3 represent typical connection schemes for the C50 six slot RTU and the C50 CP.

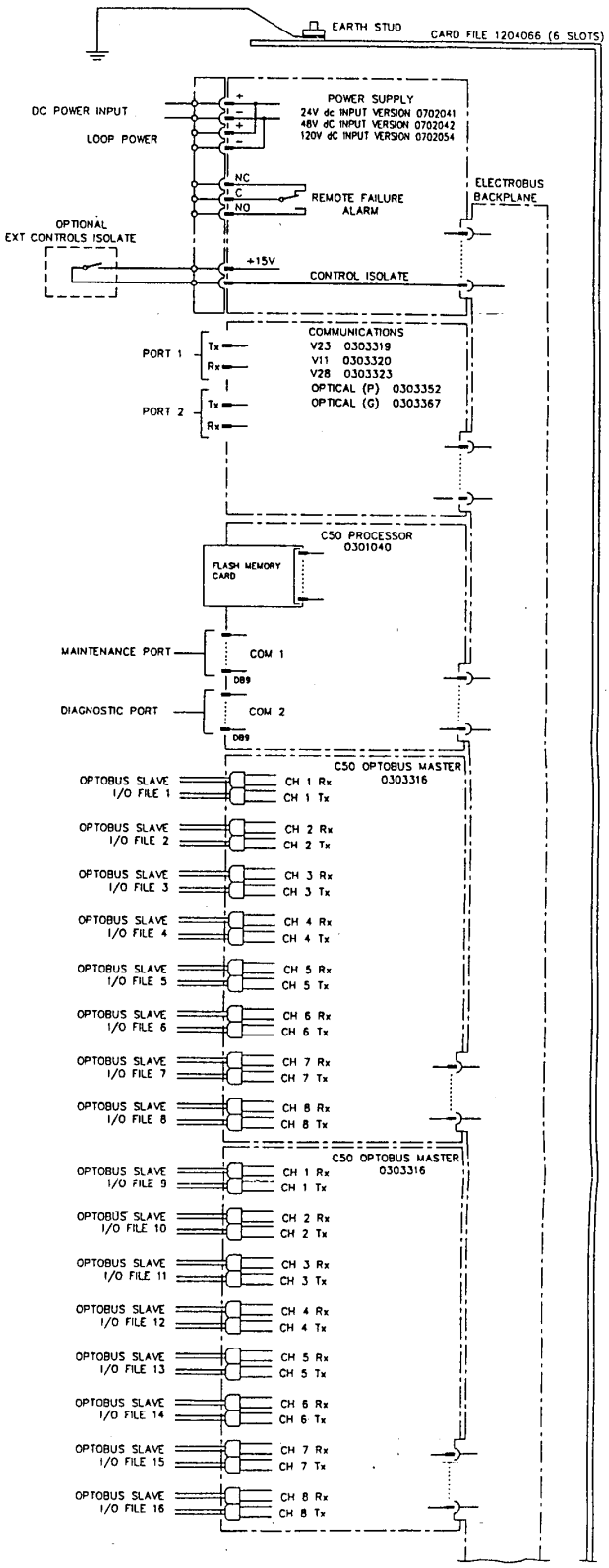


Figure 2. C50 Six Slot Typical Connection Diagram

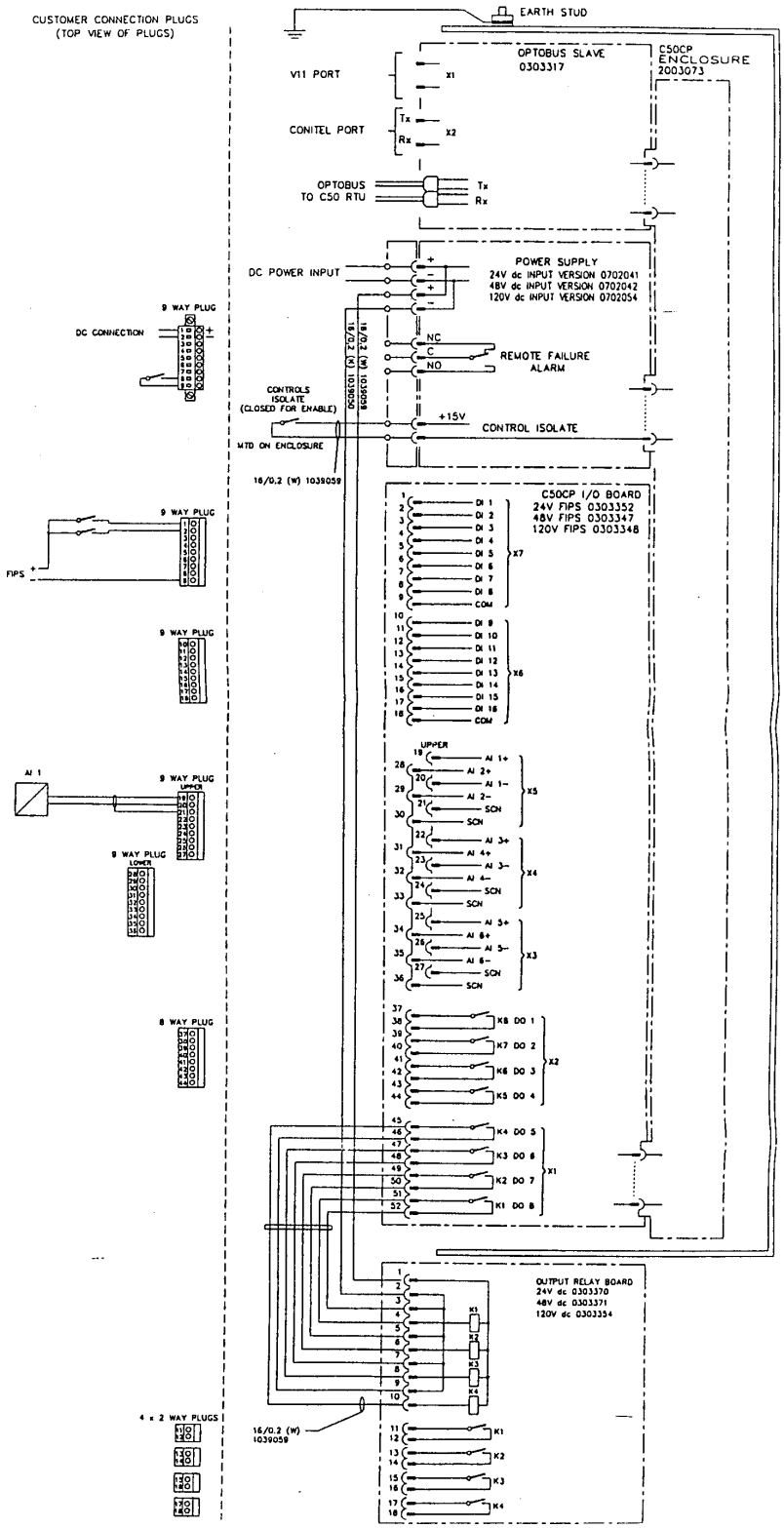


Figure 3. C50 CP Typical Connection Diagram

PHYSICAL SPECIFICATIONS

Cabinet Size (typical: w x h x d)
1 card file - 465 mm x 266 mm x 190 mm
8 card file - 800 mm x 2000 mm x 800 mm

Cabinet Weight (typical)
1 card file - 17 to 20 kg
8 card file - 250 kg

RTU Card File Weight (typical)
12 to 15 kg for full file dependent on card content

Power Consumption
30 Watts (typical)
75 Watts (maximum with full complement of I/O cards)

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