The signal conditioner receives an attenuated (10:1) differential signal from the sense resistor. This is a simple unity gain differential amplifier with a high common-mode rejection ratio followed by an A-to-D converter (Voltage Controlled Oscillator VCO). This feeds a fiber-optic transmitter that is cabled to EISB. The signal conditioner circuitry is powered by an isolated power supply to maintain personnel and equipment safety due to the high common-mode voltage at the sense resistor. For more information refer to *Chapter 4* and *GEI-100467*.

EXAM Board

The EXAM mounts in the auxiliary cabinet and contains a sense resistor connected to a resistor network across the field. EXAM applies the low frequency ±50 V square-wave signal, supplied from the EGDM, to one end of the sense resistor. The resulting current generates a voltage across the resistor that is sent back to the EGDM.

In a redundant system, the test signal can come from either, M1 or M2. EXAM has a relay that switches between the two under the control of controller C. A single cable carries the control and sense signals between the EGDM and EXAM modules. For more information refer to *Chapter 4* and *GEI-100467*.

Alterrex applications may use two EXAM boards and two EROC boards to provide two simplex ground detectors. One is used for the exciter field circuit and the other is used for the generator field circuit.

Power Supply Boards and Modules

The exciter power supply boards are as follows:

- IS200EPDM Exciter Power Distribution Module (EPDM)
- IS200EPBP Exciter Power Backplane (EPBP)
- IS200EPSM Exciter Power Supply Module (EPSM)
- DACA Module

EPDM Module

The EPDM provides the power for the control, I/O, and protection boards. It is used in redundant control applications, and is mounted on the side of the EPBP. EPDM accepts a 125 V dc supply from the station battery, and one or two 115 or 220 V ac supplies. In simplex control applications, it is mounted on the side of the ESBP. All supply inputs are filtered. Each ac supply is rectified to 125 V dc in an ac-to-dc converter (DACA). The resulting two or three dc voltages are diode-coupled together to create the dc source supply, designated as P125V and N125V. With the center grounded, these voltages are nominally +62.5 V and –62.5 V to ground.

Note EPDM revision B or later is required to support 220 ac control power supplies. The DACA module must be set correctly for the supply voltage level.

Individual supply outputs to the exciter boards are fused. They have an on/off toggle switch, and a green LED indicator to display supply power availability. These outputs supply up to three EGPA boards, the EXHS board, and three EPSM modules serving the three controllers. Outputs are wired to the EPBP for distribution. For more information, refer to *Chapter 4*.

Note Any of the exciter power supply modules can be switched off from the EPDM.

EPBP Backplane

The EPBP holds three electrically isolated power supplies (EPSM) that supply power to the M1, M2, and C controllers. It also holds three EGDM. EPBP accepts 125 V dc from the adjacent EPDM, and distributes logic level power from the three EPSMs to the three controllers. Each power supply has an independent ON-OFF switch on the EPDM. The EPSM modules interface to the backplane through DIN connectors. 70 V dc and 24 V dc power is distributed from the locking connectors at the top of the backplane to the terminal boards. Refer to the figure *Exciter Power Backplane*. For more information, refer to *Chapter 4* and *GEI-100463*.

EPSM Module

The EPSM converts 125 V dc from the EPDM into the voltages required for the control system. For redundant control applications, there are three independent power supplies that supply power to each of the controllers M1, M2, and C. These supplies are located in the power supply module mounted below the control rack in the control cabinet.

The EPSM supplies +5 V dc, ±15 V dc, and +24 V dc to the controller. Power is also supplied to modules external to the control rack as follows:

- ±24 V dc to power the EDEX de-excitation module, crowbar module, EGDM, and EDCF
- Isolated +70 V dc for contact wetting to the EXHS and ECTB boards

For more information, refer to *Chapter 4* and *GEI-100462*.