Serial Connector

The 15-pin Serial Connector on the FIP Bus Controller provides for attachment of a PC computer to perform an upgrade of the operating firmware of the Bus Controller The port supports the RS-485 electrical standard

Table 1 RS-485 Serial Port Pin Assignments

Pin Number	Signal Name	Pin Number	Signal Name
1	Shield Ground	9	Termination Resistor*
2	no connection	10	RXD–
3	no connection	11	RXD+
4	ATTACH	12	TD–
5	+5V (5 Volts DC)	13	TD+
6	RTS–	14	RTS+
7	0V (DC Ground)	15	CTS+
8	CTS+	Shell	Board Frame Ground

* A 120 ohm resistor is capacitively coupled to the board frame ground

FIP Bus Connectors (Channel 1 and 2)

Two 9-pin connectors on the FIP Bus Controller provide for attachment of one or two FIP busses The top 9-pin connector is for FIP bus *Channel 1* and the bottom 9-pin connector is for FIP bus *Channel 2* Since signals on both busses are identical, the two busses provide a redundant bus capability

Table 2 FIP Bus Connector Pin Assignments

Pin Number	Signal Name	Pin Number	Signal name
1	no connection	6	D+
2	no connection	7	D–
3	no connection	8	no connection
4	no connection	9	no connection
5	no connection	Shell	Signal Ground*

* The connector shell is capacitively coupled to the board frame ground

Note that if cables with plastic shell connectors are not connected to both ports, the provided plastic connector cover and nylon screws should be used to cover the exposed metal connector of the FIP communication port not used

The FIP Bus

The FIP bus is a shielded twisted-pair wire Proper cable selection is critical to successful operation of the system Suitable cable types are listed in the *FIP Bus Controller User's Manual*

Conservative wiring practices, as well as national and local codes, require physical separation between control circuits and power distribution or motor power Refer to sections 430 and 725 of the National Electric Code

Table 3 FIP Bus Characteristics

Bus Type	Single twisted pair plus shield Fiber optics cable and modems can also be used
Baud Rate	BEM742: 1 0 Mbaud BEM744: 2 5 Mbaud
Maximum Bus Length	1000 meters per section (for 1 0 Mbaud,); 500 meters per section for 2 5 Mbaud 4000 meters per network for 1 0 Mbaud; 2000 meters per network for 2 5 Mbaud 3 repeaters per network
Maximum Number of Devices	32 devices per section
Data Encoding	Manchester II Encoding

Connecting the Serial Bus

For information about bus selection and installation, you should refer to the *FIP Bus Controller User's Manual*

Connect the bus cable to the connector(s) on the front of the Bus Controller When installed in a single media or simplex configuration, either connector can be used When installed in a dual media or redundant configuration, both the Channel 1 and 2 connectors must be used Both connectors accept a standard 9-pin D-type male connector