



2400-BAUD DIAL-UP TELEPHONE MODEM for Allen-Bradley PLCs

- One slot in A-B Model 1771 I/O chassis
- Data communications for remote PLC
- Bell and CCITT compatible
- Auto answer & dial on public phone lines
- Remote PLC trouble-shooting & program revisions using PC
- Hayes® compatible test & diagnostics
- FCC Part 68 Approved
- Low power & automatic standby mode

The MARC™ Model 166-010 is a full-function modem which plugs into one slot of an Allen-Bradley PLC (Programmable Logic Controller) and provides data communications with other Bell and CCITT compatible modems at speeds up to 2400 baud.

The Auto-Answer and Auto-Dial features of the modem allow it to use the public switched telephone network for communications. Besides providing greater economy and flexibility, this method allows a remote PLC to be accessed from any modem-equipped personal computer for trouble shooting and program revisions. Powerful test modes include response to remote digital loopback commands issued by Hayes compatible modems.

Auto-Answer operation is controlled by a 16-position rotary switch on the module. Position "0" disables the Auto-Answer mode. Positions 1 thru 15 determine the number of rings allowed before the modem answers the line (position 1 for 1 ring, position 2 for 2 rings, etc.). At the start of the Auto Answer sequence, the modem's serial port is disconnected from the telephone line. After answering the incoming call, the modem begins a handshake sequence with the calling modem to determine the optimum baud rate and signaling standard. Once this is determined, the modem connects to the serial port, switches to the "DATA" mode and transfers data unchanged between the serial port and the line.

The serial port is always operated at 9600 baud, 8 data bits and no parity regardless of the line connect speed. An on-board microprocessor automatically handles the speed differences.

Three methods of Auto-Dial operation are available, depending on the setting of switch S2.

Position 1 - A Dial sequence is initiated when a contact closure from the PLC is detected by the opto-isolated input of the modem. The modem will go off-hook and dial the number when the input goes active. When the input returns to its inactive state, the modem will terminate the call and go back on-hook. The telephone number to be dialed must have been previously stored in the non-volatile memory of the modem using a terminal connected to the serial port.

Position 2 - The modem is controlled by sending standard "AT" commands to the serial port. Any PLC module that can send ASCII coded strings, such as a BASIC module, can be used to send the commands.

Position 3 - The modem is controlled by sending it DF1 formatted commands from the PLC. The commands are sent using standard ladder logic MSG instructions. The data portion of the command specifies the function to perform.

There are a number of other MARC products for mounting in an Allen-Bradley I/O chassis. Included are FSK modems for leased lines and radio links, the Model 166-001 Comm-Master™ SCADA communications controller, and the Model 127-005 Comm-Troller™ protocol adapter. Applicable cable assemblies are available.

Specifications

Physical:

Standard Allen-Bradley module size (1.1"W x 10"H x 5.75"D) with A-B style metal shroud
1 pound, 14 ounces

Operating Environment:

0° to 60° Celsius
10% to 90% relative humidity (non-condensing)

Power Requirements:

Nominal 300mA @ 5 VDC from PLC backplane when active, cut to < 100mA when inactive

LED Indicators (7):

Provides status of the following signals: Modem RXD, Modem TXD, On Line, RS232 TXD, RS232 RXD, Error and Active

Audio Speaker:

Miniature piezoelectric type for monitoring modem functions; selectable enabling and volume

Operating Modes and Speeds:

CCITT V.22, Bell 212, V.21 and Bell 103
Asynchronous 2400, 1200 or 300 baud

Reset Switch:

Front access push-button to hang up line and reset internal microprocessor.

Configuration Switches:

Four 16-position rotary switches
S1 Selects Auto Answer mode (number of rings)
S2 Selects Auto Dial method
S3 For future use
S4 For future use

Inputs and Outputs:

Serial Port: 15-pin "D" connector (DE15S) for serial asynchronous data link to unit served (such as communications interface module for Allen-Bradley PLC) Select RS-232, RS-422 or RS-485 operation with jumpers inside modem case.

Screw terminals, 1771-WC swing arm connector (supplied with the modem) for the following:

- (2) Connections to the telephone line (tip and ring)
- (2) Relay Contact Output (7 A max @ 30 VDC or 240 VAC). Contact closed during ring.
- (4) Two Optically Isolated Digital Input pairs (nominal 24 VDC, 20 mA; use 12-36 V source or sink such as output module of PLC). One input is used as a command from PLC to dial stored number and hold until released. The second input is for future use.

Mille Applied Research Company, Inc.

PO Box 87634, Houston, Texas 77287

(800) 729-0818 • (713) 472-6272