



DUAL OR REDUNDANT FSK MODEM

for Allen-Bradley PLCs

- One slot in A-B Model 1771 I/O chassis
- Redundant or independent channels
- Standard Bell and CCITT compatibility
- Channels separately user-configurable
- Switch-selectable transmit levels
- LED status indicators
- Use phone channels or twisted pairs
- Field-proven reliability & convenience

The MARC™ Model 148-001 module consists of two asynchronous, frequency-shift-keying (FSK), voice-band modems in a single package. The modems provide reliable long-distance data communication on dedicated telephone channels, radio channels, or local twisted-pair cables. Compatibility is assured with other modems using any of four standard operating modes at speeds up to 1200 baud.

The module plugs into one slot in a Model 1771 input-output chassis for an Allen-Bradley PLC (programmable logic controller), deriving its power from the chassis. It is typically used to connect the PLC with one or more other PLCs in a SCADA (supervisory control and data acquisition) system.

The pair of modems can be operated as independent units, perhaps serving two PLCs at the same site. Each modem has its own RS-232 digital port and RJ-11 analog port on the front. Alternatively, the module can provide redundant communication for a single digital channel by connecting it to either of the two modems according to the DTR input state. If communication through one modem fails, an appropriately programmed communication controller switches to the other.

The modems can be used in either two-wire or four-wire configuration. Each channel is independently switch selectable for operating modes, transmit levels, and frequency equalization. Selection switches are located inside the module case.



DUAL OR REDUNDANT FSK MODEM FOR ALLEN-BRADLEY PLCs

Model 148-001

The Model 148-001 module is intended both for new PLC installations and for replacement of existing modems. Since the unit plugs right into the I/O rack of a PLC, there is no need to mount separate modems elsewhere in the vicinity and provide power for them.

Besides being more economical and compact, the Model 148-001 improves a communicating PLC installation in terms of simplicity, neatness, and maintainability. It is especially valuable if the PLC is equipped

with an uninterruptible power supply (UPS); a separate UPS need not be provided for the modems. User configurability allows adaptation to changing requirements for a wide variety of options. These modems have been proven in numerous applications, and the user base is referenceable for inquiries.

For similar applications requiring only a single modem mounted in an Allen-Bradley Model 1771 I/O chassis, use the MARC™ Model 137-001 FSK modem.

Specifications

Physical:

Occupies one module slot in an Allen-Bradley Model 1771 I/O Chassis

1.1" W x 10" H x 5.75" D (standard Allen-Bradley module size)

1 pound, 10 ounces

Operating Environment:

0° to 60° Celsius

10% to 90% relative humidity

Backplane Power Supply Load:

750 mA from 5 V dc

I/O for Each Modem:

Digital: 15-pin "D" connector (DE15S) for RS-232, with pins identified as follows:

1 GND	2 TXD	3 RXD	4 RTS	5 CTS
6 +12V	7 GND	8 DCD	9 nc	10 nc
11 DTR	12 nc	13 nc	14 nc	15 nc

Analog: RJ-11 modular telephone jack for analog cable; two 600-ohm line coupling transformers, meeting FCC Part 68; for 4-wire applications, transmit pair is Pins 3 & 4 (red and green wires) and receive pair is Pins 2 & 5 (yellow and black wires).

LED Indicators (9):

Redundant versus dual mode; and status of the following for each modem: CTS, TXD, DCD, and RXD.

Dual Versus Redundant Operation:

A switch selects either dual or redundant operation. In dual operation, each modem operates independently through its own digital (RS-232) port and analog (RJ-11) port. In redundant operation, only one digital port is active. It is connected to one modem or the other, according to whether the DTR (data terminal ready) input line at the active digital port is high or low. External means must be provided to make the selection.

Options Switch-Selectable Independently for Each Modem:

Operating Mode:

Bell 103/113/108 originate 300 baud full duplex
Bell 103/113/108 answer 300 baud full duplex
Bell 202 1200 baud half duplex
Bell 202 1200 baud half duplex with equalizer
Bell 202 1200 baud full duplex
Bell 202 1200 baud full duplex with equalizer
CCITT V.21 originate 300 baud full duplex
CCITT V.21 answer 300 baud full duplex
CCITT V.23 Mode 1 600 baud half duplex
CCITT V.23 Mode 1 600 baud half duplex, soft turn-off
CCITT V.23 Mode 1 600 baud full duplex
CCITT V.23 Mode 2 1200 baud half duplex
CCITT V.23 Mode 2 1200 baud half duplex, equalizer
CCITT V.23 Mode 2 1200 baud half duplex, eq & soft turn-off
CCITT V.23 Mode 2 1200 baud half duplex, eq & soft turn-off
CCITT V.23 Mode 2 1200 baud full duplex
CCITT V.23 Mode 2 1200 baud full duplex, equalizer

Transmit Level:

From -12 dB to +2 dB in 2-dB increments

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