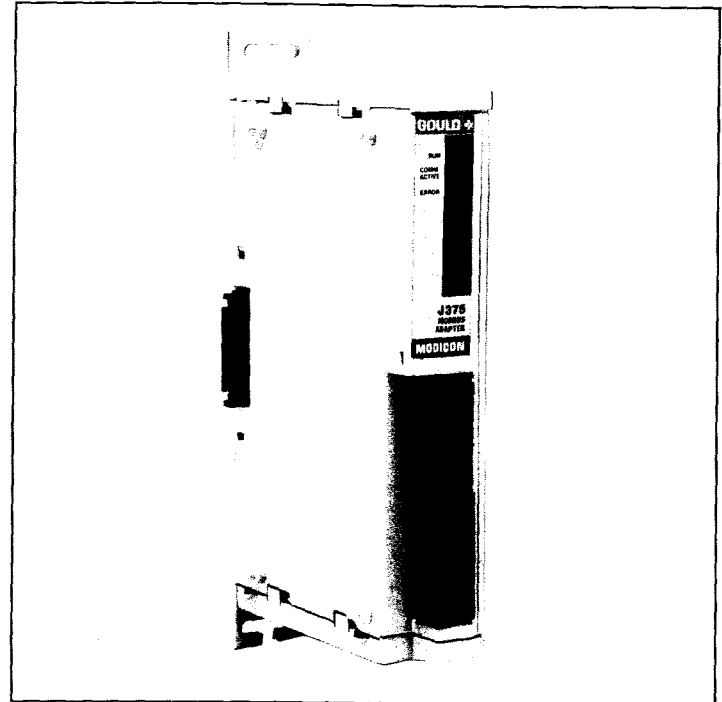


J375 Modbus Adapter DATA SHEET

The J375 Modbus® adapter is a communications interface for the *Micro 84™* controller.

FEATURES

- Connects Micro 84 (slave) to Modbus communications system.
- Addressing for 247 slaves on one system
- Mounting and packaging similar to Micro 84 I/O modules
- No modifications required to Micro 84
- One RS-232-C port
- Compatible with Modicon J378 modem plus many commercial modems
- Permits simultaneous P370 programming and Modbus communications
- Comprehensive diagnostic capability and extensive error checking
- Switch selectable address and system parameters
- Supports mixed Modicon PC network



GENERAL DESCRIPTION

The J375 Modbus Adapter is a communications interface module for the Micro 84 controller. As such, it interfaces the Micro 84 to a Modbus industrial communication system. It allows the Micro 84 to be a slave PC to a Modbus master.

The adapter is packaged in a modified Micro 84 I/O module case. This case is made of Lexan molded plastic with mounting brackets located on the rear of the case. This makes the J375 lightweight and easy to install.

The J375 provides port connections for the following: A P370 Micro 84 Programmer, an RS-232-C device and a Micro 84 controller.

In addition, the adapter is equipped with factory selectable options for 115/220 VAC power. The J375 contains its own power supply that generates all operating voltages for the adapter's internal processor. The J375 does not require power from the Micro 84 or the data bus.

The adapter provides three LED indicators.

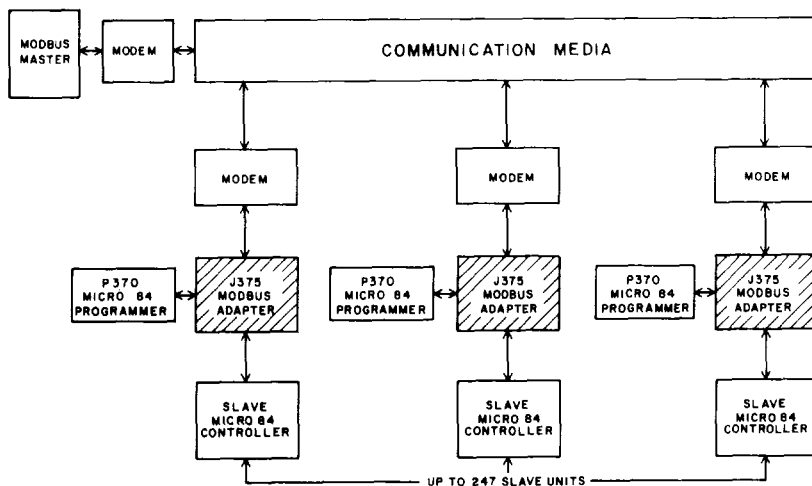
“Run”, “Comm Active”, and “Error”. These indicators display both operating status and trouble indications. You can use these indicators for fast troubleshooting.

The J375 provides dip switches at the rear of its case for address and system parameter selection.

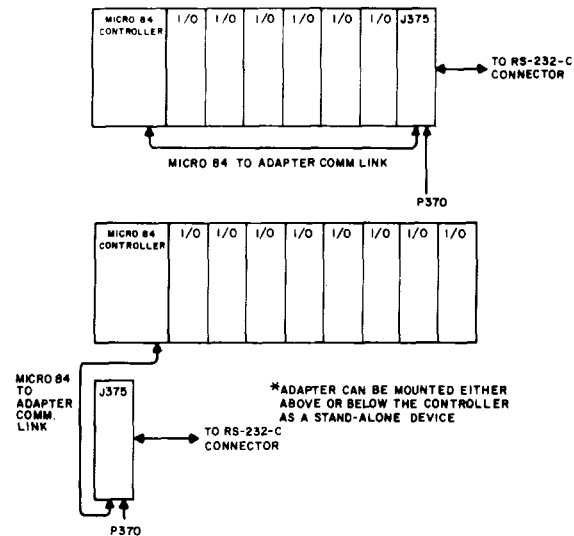
The Modbus adapter supports function codes 1-8 and 15-19. In addition, the J375 allows simultaneous use of both the Modbus port and P370 port. In the event of a conflict, the adapter gives the Modbus port the higher priority, and the P370 port monitors operations only.

The J375 assures maximum system integrity through parity and message redundancy checks, exception responses, loopback diagnostics and automatic retries.

The J375 Modbus Adapter is compatible with all current Modbus products, which allows a mix of Gould PC's on a Modbus network.



Typical Modbus Network
Showing Placement of J375 Modbus Adapter Within Network



Two Possible Mounting Configurations

SPECIFICATIONS

EIA RS-232-C Signals Supported

1. Transmitted Data (TXD), an output from the J375
2. Received Data (RXD), an input to the J375
3. Request to Send (RTS), an output from the J375
4. Clear to Send (CTS), an input to the J375
5. Data Set Ready (DSR), an input to the J375
6. Data Terminal Ready (DTR), an output from the J375

Modbus Compatibility

Baud Rate supported by J375

75	1,200
110	2,400
134.5	4,800
150	9,600
300	19,200
600	

Transmission mode, stop bits, and parity supported by J375

Parity Option	Even Parity		Odd Parity		No Parity	
	1	2	1	2	1	2
No. of Stop Bits						
ASCII	X	X	X	X	NS	X
RTU	X	NS	X	NS	X	NS

X = Supported
NS = Not Supported

Function Codes	Sub-Functions	Description	Supported	Not Supported
1		Read Output Status	X	
2		Read Input Status	X	
3		Read Output Register	X	
4		Read Input Register	X	
5		Force Single Coil	X	

Function Codes	Sub-Functions	Description	Supported	Not Supported
6		Set Single Register	X	
7		Read Exception Status	X	
8	0	Loopback	X	
	1	Initiate Comm Restart	X	
	2	Return Diagnostic Register	X	
	4	Force Listen Only Mode	X	
9		Program (484 PC only)		X
10		Poll (484 PC only)		X
11		Fetch Event Counter		X
12		Fetch Communications Event Log		X
13		Program (184/384/584 PC's)		X
14		Poll (184/384/584 PC's)		X
15		Force Multiple Coils	X	
16		Set Multiple Registers	X	
17		Report Slave ID	X	
18		Program Commands (Micro 84 PC) (Gould Modicon Proprietary Command)	X	
19*		Reset Link Command	X	

*Function Code 19 is a new function code. This code, via the Modbus master software, changes the values of the system parameters set by the dip switches.

Environment

Ambient Temperature	
Operating	0°C to 60°C
Storage	-40°C to +85°C
Humidity	0-95% (non-condensing)

Dimensions (W x H x D)

	1.63 in x 10.50 in x 5.50 in (41.40 mm x 266.70 mm x 139.70 mm)
Weight	2 lbs, 2.5 oz (0.978 kg)

NOTES

1. Install as the last module in the I/O structure, if J378 modem not used.
2. Install anywhere within the range of the Micro 84 cable (cable is 6 ft. long and interchangeable with P370 cable).

J378 Modem DATA SHEET

The J378 Modem allows a J375 Modbus® Adapter to be used with a 4-wire, twisted pair, fully shielded cable network.

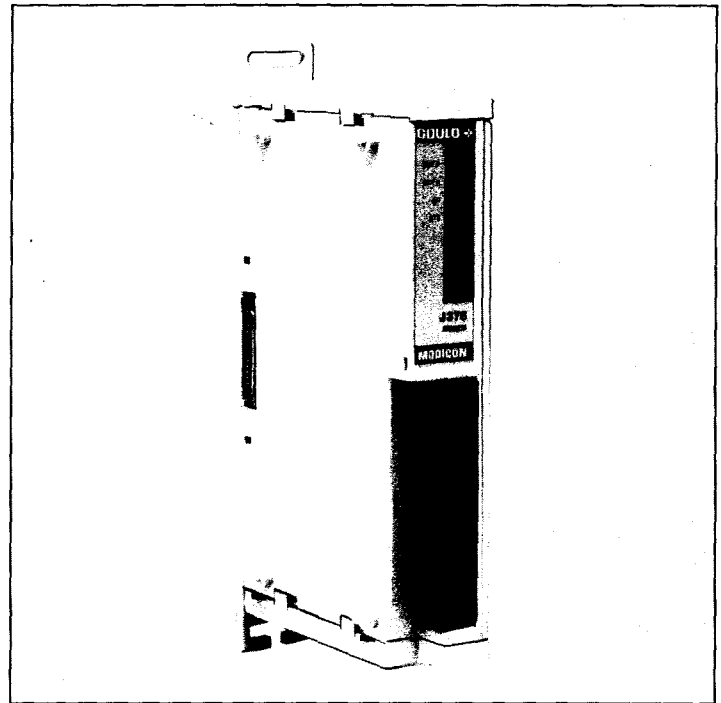
FEATURES

- Allows short-haul data transfer for in-plant *Micro 84[™]* controller
- Allows transmission over a 4-wire, twisted pair cable
- Designed for harsh industrial environment
- Low cost
- Easy to install
- Operates asynchronously at speeds up to 19,200 bps
- Uses frequency shift keying (FSK) to maximize noise immunity
- Tolerates a maximum signal loss of 35 dB
- Operates in half-duplex transmission mode
- Does not require an additional power supply
- Monitors certain EIA control signals via LEDs
- Mounting and packaging similar to Micro 84 I/O modules
- Compatible with Gould J478 Modem

GENERAL DESCRIPTION

The J378 Modem allows a J375 Modbus Adapter to be used with a 4-wire, twisted pair cable network, when the cable is used in a multipoint environment. It attaches to the right side of the J375 and receives both power and RS-232-C signals from the adapter. It connects to the 4-wire, twisted pair cable by way of a terminal strip on the front of the modem.

The J378 uses FSK modulation that is compatible with the J478 Stand-alone Modem. The J378 meets or exceeds the specifications for the J478 Modem, except for voice communications. The J378 does not have voice communication capability.

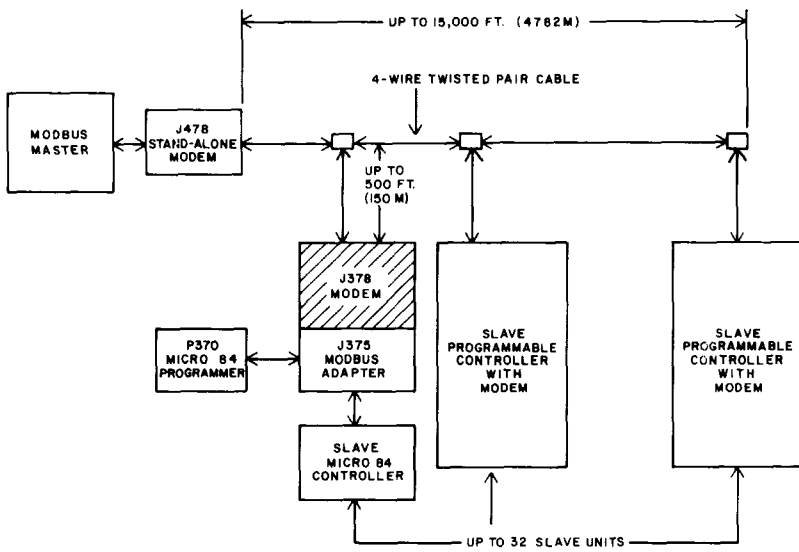


The J378 attaches to the right side of the J375 Modbus Adapter through the RS-232-C port on the adapter. Attaching the modem to the adapter dedicates the RS-232-C port for use by the modem.

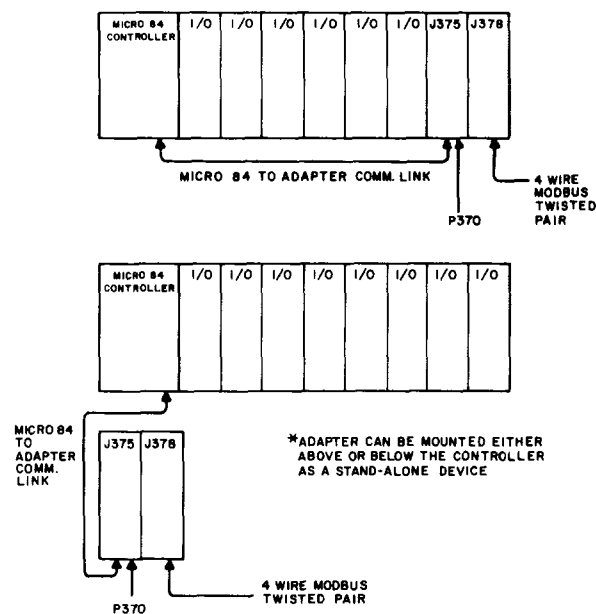
The J378 interfaces with the Modbus twisted-pair cable network through four terminals on the front of the modem. You simply connect the twisted-pairs directly to the terminals on the front of the unit. The terminals are clearly marked as to which is receive and which is transmit. The J378 supports the Modbus 4-wire, twisted pair cable network only.

The J378 uses four LED indicator lights to display operating status.

XMIT D (Transmit Data to cable)
 RCV D (Receive Data from cable)
 CD (Carrier Detect from cable)
 RTS (Request to Send from J375 Adapter)



Typical Modbus Network
Showing Placement of J378 Modem Within Network



Two Possible Mounting Configurations

SPECIFICATIONS

Electrical Characteristics

Mark Frequency	50 kHz
Space Frequency	80 kHz
Maximum Data Rate	20 kHz
Form of Modulation	Frequency Shift Keying
Allowable Signal Attenuation	35 dB
Max. No. of Drops	32*

Max. Cable Length	15,000 ft*
Transmission Media	Four conductor, fully shielded twisted-pair cable (i.e., Belden 8777)

Type of Transmission Asynchronous
*Main cable, drop lengths, and number of slaves are all inter-related parameters. For instance, the 15,000 ft. maximum length can be increased if less than 32 slaves are used.

Environment

Ambient Temperature	
Operating	0° to 60°C
Storage	-50° to +85°C
Humidity	0 to 95% (non-condensing)

Dimensions (W x H x D)

1.63 in x 10.50 in x 5.50 in (41.40 mm x 266.70 mm x 139.70 mm)
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Weight

1 lb, 5.5 oz (0.610 kg)

NOTES

1. Install as the last module in the I/O structure.
2. Install anywhere within the range of the Micro 84 cable (cable is 6 ft. long and interchangeable with P370 cable).

Micro 84/P190 Programmer/Tape Loader

DATA SHEET

The Gould Modicon Programmer/Tape Loader cartridge permits programming of the Micro 84 Programmable Controller by the P190 CRT Programmer.

FEATURES

- Programmer and Tape Loader Functions
- Element Editing
- Network Editing
- 4 x 7 Ladder Logic Display
- Element Status Display
- Partial and Full Reference Screens
- Network Create, Replace, Exchange and Delete
- Logic Expand and Compress
- Program Load, Record and Compare
- Program Documentation

GENERAL DESCRIPTION

The Gould Modicon Programmer/Tape Loader cartridge, used in conjunction with the Micro 84 Programmable Controller, the J375 Modbus Adapter, and the P190 full-family CRT Programmer, provides programming functions for program preparation, editing, documentation, debug, and system maintenance. With Programmer/Tape Loader, the user can perform local programming functions on the plant floor or expand the Micro 84 controller's versatility by performing remote programming and tape loading operations. In addition, it provides control for starting and stopping the Micro 84 controller, reporting its configuration, and writing the program pack.

There are two programming options: **Element Editing** and **Network Editing**. **Element Editing** permits the user to make entries and/or changes directly into the Micro 84 controller's memory. **Network Editing** permits the user to make changes in the P190 programmer's memory before making changes in the Micro 84 controller's memory. With **Network Editing**, the user can experiment with network changes while preserving existing logic. Both editors can read existing networks, create new networks, edit networks, disable and force elements, report full or partial reference tables, report coil usage tables, and perform element

searching. **Network Editing** offers the additional capability of deleting, replacing, exchanging, compressing, and expanding networks.

Four Tape Loader functions allow the user to:

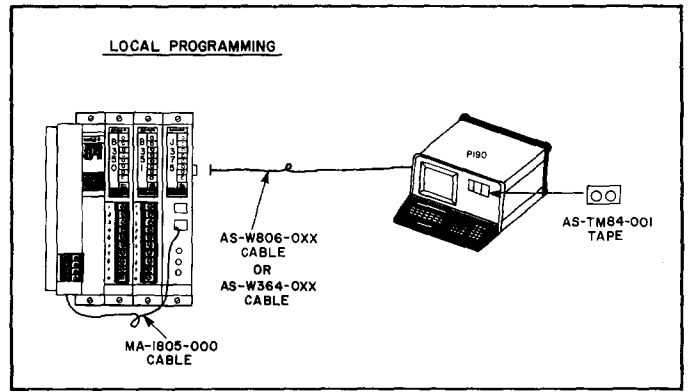
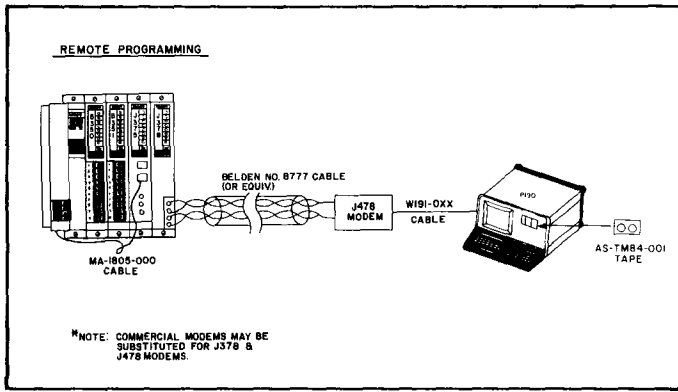
1. **Load** from the P190 tape to the Micro 84.
2. **Record** the Micro 84 memory onto the P190 tape.
3. **Compare** the Micro 84 memory with the P190 tape.
4. **Write** the Micro 84 memory onto the program track.

The **Load** function allows the user to construct new programs by loading and later editing selected networks from a previously prepared program.

Record enables the user to preserve a copy of the program on a P190 tape for later use. A program may also be recorded on a Micro 84 program pack by **Writing** the program pack function.

Compare is used to verify that the Micro 84 controller's memory contains the same program as that on a P190 tape. Comparison may be performed on all memory, selected networks, or selected registers. The user may also select a log-and-pause or continuous-log mode for reporting mismatches.

The Programmer/Tape Loader cartridge plugs directly into the P190 tape transport. Local use requires a Gould Modicon J375 Modbus Interface. Remote use requires a J375 plus Gould Modicon J378 and J478 modems (or commercial equivalents). A P190 cable (either AS-W806-OXX or AS-W364-OXX) provides the communications link between the P190 and J375. When using a J375, the user must set port parameters and address selection on both the J375 and P190 programmer. A hard copy printout of the P190 programmer's CRT screen is obtained by connecting an RS-232-C compatible printer to the P190 programmer's second communications port.



SPECIFICATIONS

Operations

Start PC
 Stop PC
 Program
 Tape Loader
 Attach
 Detach
 Clear PC.
 (logic and/or references)
 PC Configuration

Element and Network Editor

Read Network
 Edit Network
 Force On/Off
 Enable/Disable
 Hold/Release Reference Display
 Coils Used
 Full Reference Display
 Partial Reference Display
 Search Display
 Search List
 Print (any P190 display)

Network Editor (only)

Create Network
 Delete Network
 Dummy References or Presets
 Replace Network
 Flip Network
 Exchange Network
 Expand/Compress Network

Tape Loader

Load
 Record
 Compare
 Program Pack

Load PC

All Memory
 Selected Networks
 Selected Registers

Record PC

Set Title
 Set Date
 Set Serial Number

Compare PC

All Memory
 Selected Networks
 Selected Registers
 Error Halt Mode
 Error Log Mode
 Maximum Miscompare Count

Media

3 "son" ready-to-use cartridge tapes (non-reproducible) Scotch DC100A or equivalent.

