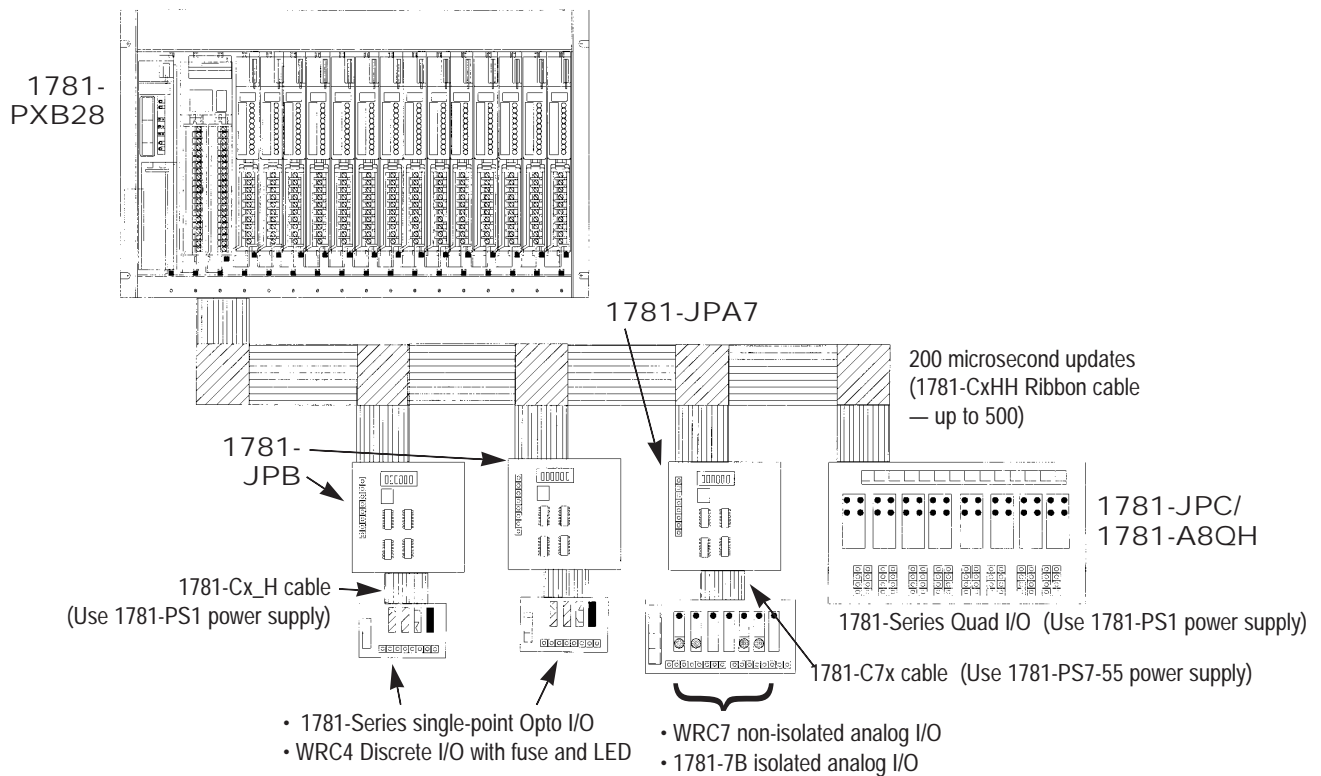


PC-based SmartPMux



SmartPMux

Overview

In many applications, remote serial communications are not able to provide the necessary speed and performance. In these instances a high-speed parallel bus can be used. Western Reserve Control's SmartPMux™ line of industry compatible products provide such a parallel, high-speed solution. SmartPMux provides the capability for a host, such as a PC, to read/write up to 512 digital I/O points in less than 200 μ sec.

This solution uses a 1781-PXB28 card in the personal computer or industrial computer to manage the protocol of the high-speed parallel, remote bus. A 50-conductor ribbon cable is used to provide the connection to the 1781-JPB or 1781-JPC SmartPMux adapters using WRC standard, slim or quad modules. The 1781-JPA7 adds analog capability to your system. The SmartPMux family of products is Opto22 PAMUX-compatible. Any combination of 1781-JPB, 1781-JPC and 1781-JPA7 devices, along with other vendors PAMUX-compatible equipment, may be mixed with the same network.

Interconnection

The cable from the host is connected to the first controller board on the bus and then daisy chained to additional controller boards. Up to 32 controller boards with 16 modules racks (or 16 controller boards with 24 modules racks) can be added anywhere along the cable. The maximum number of I/O per parallel port is 512.

Speed

The parallel bus is high speed. The host computer can read or write eight digital I/O modules in less than 3 microseconds which means that 512 digital I/O modules can be scanned in less than 200 microseconds! Each group of eight I/O modules are accessed through a separate I/O port register on the host computer or controller. In assembly language, an IN or OUT instruction is used to read or write this information. In C language, an inp or outp function call is used. In BASIC, an INP or OUTP instruction is used.

Watchdog Timer

Each SmartPMux adapter has an on-board communications watchdog timer which monitors communications between the host and controller board. A timer value between 0.5 seconds and 12 seconds is selected for each board. On power up, the timer begins counting down. Whenever a message from the host is detected, the timer is restarted. Should the timer time out, all of the output modules being controlled by the board will be set to a predetermined state (e.g. all off).

Other Features

One of the control lines on the parallel bus is called RESET. The RESET line can be used to simultaneously turn off all of the output modules being controlled by each of the discrete I/O mounting boards on the bus.

Three LEDs on the controller boards assist in troubleshooting problems. They indicate when power is being applied, when messages are being received, and when the watchdog timer has timed out.



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1781-PXB28

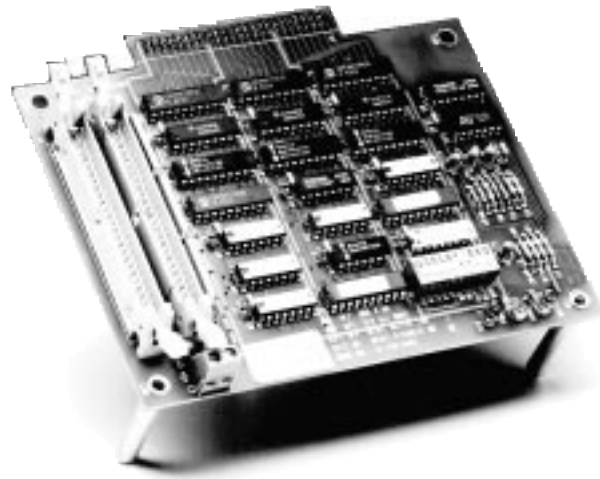
The 1781-PXB28 is a PAMUX-compatible PC plug-in board that plugs into any available ISA slot. Up to 512 points of I/O can be monitored or controlled with WRC SmartPMux adapters, or other compatible brain boards, by the PC host. The I/O appears as memory locations to the host application program.

Features

- PAMUX-compatible
- System cable length of 500 feet maximum
- Mounts in any ISA compatible half or full slot
- Setup is handled through DIP switches rather than jumpers
- Up to four 1781-PXB28 systems can be installed in a single PC
- Updates 512 I/O in less than 200 μ sec.
- Supports WRC 1781-JPB, 1781-JPC, and 1781-JPA7.
- Supports other supplier's PAMUX-compatible products, such as B4, B5 and B6.

Specifications

- 50-pin male header connector
- Dimensions: 5.0" depth (1/2 XT slot)
- 1.5 A @ 4.9 to 5.1 V dc
- 0 to 60°C
- Equivalent to AC28



1781-JPB

The 1781-JPB is a high-speed, addressable remote, parallel, adapter. Using the 1781-PXB28, a host can read or write to all points on a fully configured system (512 points of I/O) in less than 200 μ sec. Connection between the SmartPMux adapters and the host is via a 50 conductor ribbon cable. The total length of the system can be up to 500 feet. A 1781-JPB SmartPMux can address 8, 16, 24 points of WRC single point digital I/O and is completely compatible with B4 and B5 PAMUX brainboards.

Features

- PAMUX-compatible
- 24 point addressing reduces the number of adapters required in a system
- Termination resistors integral to the SmartPMux adapter
- Set up is accomplished via dip switches rather than jumpers
- LED indicators for watchdog, address, and power
- Can be mixed with B4, B5, B6, 1781-JPC and 1781-JPA7 adapters and brainboards on the same cable
- Read or write 8 channels in less than 3 μ sec.
- Plugs into racks with up to 24 single point discrete I/O positions

Specifications

- Two 50-pin male header connectors
- 1.1 A @ 4.9 to 5.1 V dc (1.5 A with termination resistors)
- 0 to 60°C
- AC28 compatible
- Dimensions: 5.0" x 6.0" x 1.7" (H)

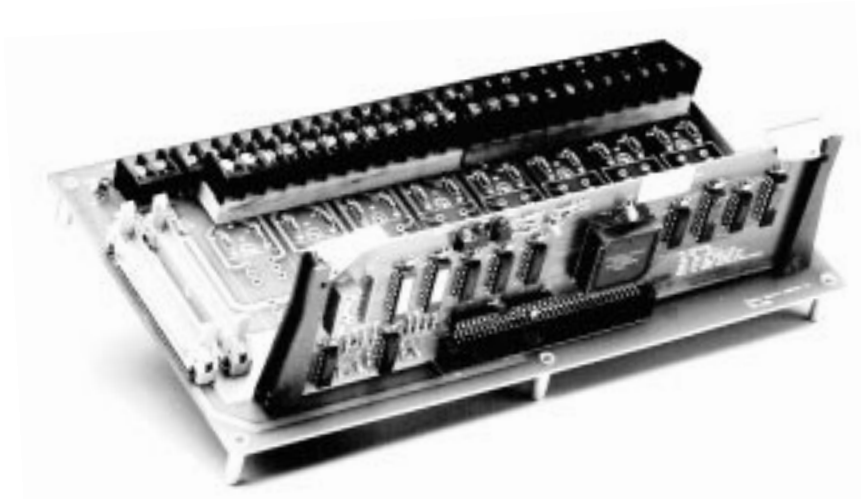


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1781-JPC

The 1781-JPC is a high-speed, addressable remote, parallel, adapter which plugs into the 1781-A8QH mounting board. Using the 1781-PXB28, a host can read or write to all points on a fully configured system (512 points of I/O) in less than 200 μ sec. Connection between the SmartPMux adapters and the host is via a 50 conductor ribbon cable. The total length of the system can be up to 500 feet. A 1781-JPC SmartPMux can address 32 points of WRC quad point digital I/O using the 1781-A8QH mounting board.

Features

- PAMUX-compatible
- 32 point addressing reduces the number of adapters required in a system
- Termination resistors integral to the SmartPMux adapter
- Set up is accomplished via DIP switches rather than jumpers
- LED indicators for watchdog, address, and power
- Can be mixed with B4, B5, B6, 1781-JPA7 and 1781-JPB adapters and brainboards on the same cable
- Read or write 8 channels in less than 3 μ sec.
- Plugs into the 1781-A8QH mounting board with up to 8 quad module discrete I/O positions (32 points)

Specifications

- 3.12" x 9.250"
- 1.1 A @ 4.9 to 5.1 V dc (1.5 A with termination resistors)
- 0 to 60°C
- AC28 compatible



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1781-JPA7

The 1781-JPA7 is a high-speed, addressable remote, parallel adapter for 1781-7B Analog modules. Each 1781-JPA7 will support up to 16 analog I/O, of which the first 8 may be selected as outputs, and up to 32 units (512 I/O) may be connected to the same network. The 50-pin ribbon cable may be up to 500 feet maximum length.

Features

- 16-point addressing reduces the number of adapters required in a system
- Termination resistors integral to the SmartPMux adapter
- Set up is accomplished via DIP switches rather than jumpers
- LED indicators for watchdog, address, and power
- High-speed analog I/O
- Can be mixed w/high speed digital I/O on same network
- Compatible with the PAMUX protocol for analog I/O
- Up to 32 SmartPMux (analog or digital) devices can reside on the same network.

Specifications

Communications:

- SmartPMux/PAMUX, capable of driving 500 feet
- On-board network termination (no separate "terminator" device required)

Address selection:

- Select one of 32 addresses

Interface:

- Two 50-pin male header connectors to 50-conductor ribbon cable of PAMUX network
- 26-pin male header connector to a 1781-7B mounting board via a 1781-C7x cable

Analog I/O:

- 0-10 Vdc
- 12-bit ADC
- 12-bit DAC
- Up to sixteen (16) 1781-7B or WRC7 input modules or direct inputs.
- Up to 8 1781-7B or WRC7 output modules or direct outputs.
- Refresh rate <3 msec for all inputs or all outputs.

Address selection:

- 5 positions on DIP switch

Reset level selection:

- 1 position on DIP switch

Watchdog triggered:

- Red LED



Address selected:

- Green LED

5V power applied:

- Green LED

Watchdog function:

- Software defined via host command

Form factor:

- Panel mount
- 4.27" x 6.5"

PAMUX commands:

- Reset
- Configure analog bank
- Configure analog bank, extended
- Configure analog point
- Read analog bank
- Read analog point
- Write analog bank
- Write analog point
- Set analog watchdog time-out
- Write analog watchdog bank
- Write analog watchdog point

Power requirements:

- Supports 24 Vdc power supply – unregulated

Operating temp:

- 0-70 degrees C

Humidity:

- 0-95% RH, non-condensing

Note: See page 102 for configuration guidelines.



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