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Find the *National Instruments GPIB-140* at our website: *Click HERE*

Fiber-Optic and Parallel GPIB Extenders

NI GPIB-140A Series

- Extends the maximum GPIB cable distance
  - 1 km (GPIB-140A)
  - 2 km (GPIB-140A/2)
- High-speed fiber-optic transmission
- Transfer rates
  - More than 1.1 Mbytes/s (IEEE 488.1)
  - More than 2.8 Mbytes/s (HS488)
- Expands the number of GPIB devices to 26
- Buffered or unbuffered transfers
- Software transparent – no software modifications required
- Complete error-checking capabilities ensure successful data transmission
- Transparent passing of control to remote GPIB devices
- Handles IEEE 488.2 Find All Listeners protocol

NI GPIB-130

- Extends the maximum GPIB cable distance to 300 m
- High-speed parallel transmission
- Transfers greater than 900 kbytes/s
- Buffered or unbuffered transfers
- Expands the number of GPIB devices to 28
- Software transparent – no software modifications required
- Transparent passing of control to remote GPIB devices

Applications

- Control remote printers or plotters as if they were next to your computer
- Isolate devices in noisy or hazardous environments
- Control factory-floor tests from a remote office



Overview

The National Instruments GPIB extenders remove the restrictions on cable length and device loading imposed by the IEEE 488 standard while requiring virtually no desktop space. The IEEE 488 standard specifies that the total cable length for a GPIB system cannot exceed 20 m and the maximum number of devices is 15. A pair of NI GPIB-140A/2 bus extenders can extend the cable length to 2 km without compromising the integrity of the GPIB or requiring any application modifications. The GPIB-140A can use fiber-optic cable lengths up to 1 km. The NI GPIB-130 can extend the distance up to 300 m with a high-speed parallel transmission.

These GPIB extenders use a buffered transfer technique to transfer data at the fastest rates in the industry, while keeping the cabling cost at a minimum. Each extender has an error-checking scheme to ensure an error-free link. The maximum data transfer rate over the extension with GPIB-140A extenders is more than 2.8 Mbytes/s using the HS488 protocol. The GPIB-130 extenders can achieve rates of more than 900 kbytes/s.

IEEE 488 Compatibility

The GPIB-140A, GPIB-140A/2, and GPIB-130 bus extenders are compatible with both IEEE 488.1 and IEEE 488.2. Unlike other extenders that respond to all GPIB addresses during the Find All Listeners protocol, this operation occurs normally with the GPIB-140A and GPIB-140A/2.

Software

When you use a pair of GPIB-140A or GPIB-130 units to extend the GPIB system, all devices on the two GPIBs logically interface to a single system controller. That is, the GPIB extender units are software transparent to the system. When you add the GPIB extenders to a system, existing programs work properly without modification. You even retain the ability to respond to parallel polls.

Hardware

Each GPIB extender monitors GPIB activity and translates GPIB messages into serial or parallel signals for transmission to a matching extender. The receiving extender converts the signals back to IEEE 488 signals. There are two data transfer operating modes – buffered and unbuffered. In the unbuffered mode, the IEEE 488 double-interlocked handshake is maintained across the extension. The transmission cable holds each byte until both the sender and receiver confirm that it transmitted correctly. In the buffered mode, extenders use FIFO buffers to increase data transfer rates. All HS488 data transfers, handled by the GPIB-140A extenders only, use buffered mode. The buffering, which the hardware manages completely, requires no modification of your applications.

There are two selectable modes to handle parallel polls – immediate and latched. In immediate mode, valid parallel poll responses from remote devices return within the required time period for cable lengths of 100 m and less. For longer distances, you can use the parallel poll latched mode. In latched mode, the response to the previous parallel poll is returned. To obtain the most current parallel poll response, you issue successive parallel poll commands.

Cables

The GPIB-140A uses a standard fiber-optic connection as the transmission medium. The fiber-optic cable electrically isolates the remote bus from the local bus, as well as being easy to route and immune to noise. It is well suited for transmitting signals through

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Fiber-Optic and Parallel GPIB Extenders

electromagnetically active or physically hazardous areas. National Instruments offers two classes of cables, T7 and T8. Both types have ST connectors and core/clad of 62.5/125 µm. T7 and T8 cables operate at 850 and 1,300 nm, for distances up to 1 km and 2 km, respectively.

The GPIB-130 has three transmission cables. The T6 cable is National Electric Code CL2P plenum rated. You use the CL2-rated T2 cable for distances from 50 to 300 m. The CL2-rated T5 cable is a smaller, lighter, less-expensive replacement for the T2 cable for distances up to 50 m.

Performance

Any bus extender or bus expander degrades normal system performance. The propagation delay introduced by the extender itself and the distance between the extenders causes this degradation. The data transfer rate without buffering between the extenders decreases as the cable length increases.

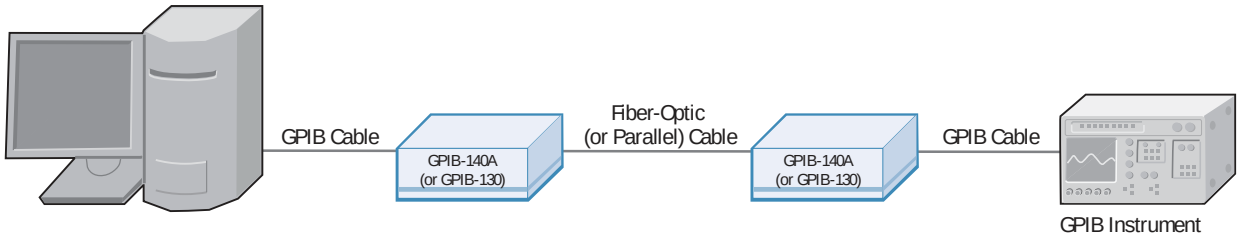


Figure 1. Typical System Setup

Ordering Information

Fiber-Optic Extenders

GPIB-140A[1] 777997-0P
GPIB-140A/2[1] 777998-0P

Parallel Extender

GPIB-130[1] 776526-0P

P= power source
1= U.S. 120 VAC
2= Swiss 220 VAC
3= Australian 240 VAC
4= Universal Euro 240 VAC
5= North American 240 VAC
6= United Kingdom 240 VAC

[1]Typical setup requires a pair of extenders and a connecting cable.

Cables

T7 cable for GPIB-140A (up to 1 km)
- 10 m 182805-010
- 50 m 182805-050
- 100 m 182805-100
- 500 m 182805-500
- 1000 m 182805-01K

T8 cable for GPIB-140A/2 (up to 2 km)
- 100 m 183164-100
- 200 m 183164-200
- 500 m 183164-500
- 1000 m 183164-01K
- 2000 m 183164-02K

T2, T5, and T6 cables for GPIB-130 ..... See page 710

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