IEEE 488/GPIB BUS INTERFACE

DESCRIPTION

The 4896 is a four channel IEEE 488/GPIB/HP-IB to serial interface that adapts up to four serial devices to the GPIB bus. Each serial channel has been designed for independent, full duplex operation at rates up to 115.2 K baud. Large 60 K byte buffers are assigned to each channel to buffer the data. High speed DMA transfers move the data between the buffers and the GPIB interface at rates >600 Kbytes per second. This high data transfer rate coupled with large buffers in each channel, minimizes GPIB transfers and frees the bus controller for other tasks. Typical applications are adding serial channels to workstations, driving a mix of serial devices and modems from a GPIB bus and/or buffering data from remote devices.

4896 Quad Serial Interface

488.2 and SCPI Commands

The 4896 complies with the new IEEE 488.2 Standard and uses SCPI (Standard Commands for Programmable Instruments) commands to set its operating configuration. The benefit to the user is the ability to use standard commands to program and query the 4896's status plus the capability to generate Service Requests for an expanded number of events. Service requests (SRQs) can be individually enabled on a per channel basis, for message or character detection, on RX buffer 'full', on TX buffer empty, etc. This ability to enable any combination of service requests on any channel lets the user tailor the 4896's performance to his exact needs.

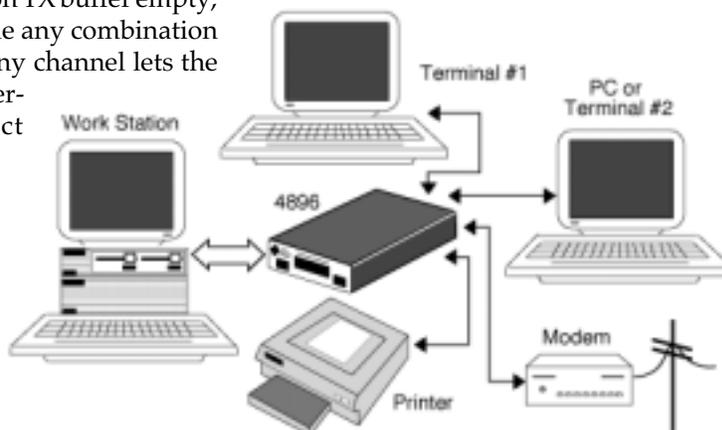**The 4896 adds four serial channels to computers with GPIB interfaces.**

Serial Channels

Each serial channel is an asynchronous DTE interface that can be configured for single-ended RS-232 or differential RS-422/RS-485 signals. Baud rate, character format, parity generation/detection, stop bits and data handshaking are independent for each channel. All settings are stored in E^2ROM to avoid loss when power is turned off. Data handshaking can be accomplished with the hardware control lines or by enabling X-on/X-off flow control protocol. Other SCPI commands control interface signals, internal loopback and external echo functions.

Each serial channel is designed for full or half-duplex, bi-directional operation. Buffer capacity is split 32 K/28 K between transmit and receive functions. Where the majority of traffic is one way, such as for printing or plotting, the user can change the buffer weighting to use 52 K bytes to buffer or spool out large blocks of data. This feature can reduce the number of bus accesses by up to 50% and further off load the bus controller.

LCD Display

The 4896 includes a front panel LCD display that shows Bus status, 4896 activity, serial interface signals, self test errors etc. At power turn-on, the display shows tself test passed or test errors and finally the unit's GPIB bus address. During normal operation, the display shows serial activity and data in TX or RX buffers. A front panel push button lets the user change the display to show buffer usage, channel set up, serial interface signals, and GPIB bus status to diagnose program or serial interface problems.

- Provides four RS-232 (single-ended and RS-422/RS-485 (balanced) serial interfaces.
  One unit connects 4 serial devices to a GPIB bus.

- High speed, 115.2 K baud channels include 60 K byte buffers.
  Large data buffers in each channel.

- > 600 K byte/sec. GPIB data transfer rate.
  Minimizes GPIB Bus time.

- SCPI commands set and query non-volatile serial channel configurations.
  Configure the unit without having to remove the cover or remember cryptic commands.

- LCD display shows Bus activity, buffer status, serial interface signals and channel settings.
  Built in status display and diagnostic aid.

- Includes a menu-driven PC compatible configuration program.
  Steps user through configuration choices.

- New 1 U high, metal case has CE approval
  Smaller size with full EMIRFI protection.

CE Approved

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IEEE 488 Bus Interface

The 4896's 488 Bus interface meets IEEE STD 488.1-1987 and has the following capabilities.
SH1, AH1, TE6, LE4, SR1, PP0, DC1,
RL0, DT0, C0 and E2 drivers.

Address Capability

Primary addresses 0-30
Secondary address 1 to 4 for data, 11 to 14 for commands and queries

SRQ Generation

SRQs are generated if the unit is not a talker, if SRQs are enabled and the Enabled ESR or Status bit occurred.

488.2 Common Commands

*CLS, *ESE, *ESE?, *ESR?, *IDN?, *OPC, *OPC?, *RCL, *RST, *SAV, *SRE, *SRE?, *STB, TST? and *WAI

Buffers

60 K bytes per channel user assignable from 8 to 52 K in 4 K steps
Default assignments:
TX Buffer   32 K
RX Buffer   28 K

SCPI Commands

Used to set and query all programmable functions. The 4896 conforms to SCPI 1995.0 Specification.

Table 1   Programmable Functions

GPIB Bus Address
Xon/Xoff Protocol Select
7/8 Bits/Character Select
1/2 Stop Bits Select
Odd/Even/None Parity Select
Parity Check Enable /Disable
Baud Rate Select
EOM character Select
EOI Enable/Disable
Add Character Select, Enable
TX Buffer Select
Display Select*
Display/Create Message*
Echo Enable/Disable*
Loop Back Enable/Disable*
Transmit Enable/Disable*
485 Half Duplex
RTS/DTR Control

*not a stored function

Serial Interface

Provides RS-232C single ended or RS-485 (RS-422) differential signals on a DE-9P connector. RS-232 pin assignments same as a PC com port - see Table 2. RS-422/485 pin assignments are listed in Table 3. The 4896 is a DTE device.

Baud Rates	300, 600, 1.2K, 2.4K, 4.8K, 9.6K, 19.2K, 38.4K, 57.6K, 76.8K and 115.2K baud. Max. four channel rate - 160 K baud.

Data Character Formats

Data bits	7 or 8 bits
Parity	odd, even, or none
Stop bits	1 or 2

Data Transfer Protocols

Hardware handshake always enabled X-on /X-off handshake enabled or disabled by a separate command.

Full-duplex or half-duplex operation with transmitter tristated when not transmitting.

Individual control of RTS and DTR signals.

Table 2   RS-232C Signals

Pin #	Signal
1	Data Carrier Detect
2	Receive Data
3	Transmit Data
4	Data Terminal Rdy
5	Ground
6	Data Set Rdy
7	Request-to-Send/TX CLK
8	Clear-to-Send/RX CLK

Table 3   RS-422/485 Signals

Pin #	Signal
2/1	Receive Data
3/4	Transmit Data
5	Ground
7/9	Request-to-Send/TX CLK
8/6	Clear-to-Send/RX CLK

Front Panel Display

A 2 x 16 character LCD display that shows 4896 activity, self test errors and user selected diagnostic messages.
Displays are:
Self Test in progress
Self Test passed
GPIB Bus Address
GPIB Bus/Buffer Status*
Serial Interface Signals
Channel Configuration
Buffer Usage
Self test error codes
Current SCPI commands and response
User created message
*Default display

Physical

Size	7.45" L x 7.29" W x 1.52" H (18.92 cmL x 18.52 cmW x 3.86 cmH)

Weight	3 lbs. (1.4 kg.)

Temperature	
Operating	-10° C to +55° C
Storage	-20° C to + 70° C

Humidity	0-90% RH no condensation

Construction	All metal case shields RFI

Power 9 to 32 Vdc @ 7 VA

Included Accessories

Instruction Manual
3.5" Configuration Program Disk
UL/CSA/VDE approved AC power
Adapters provided for:
US - 115±10% Vac, 60 Hz (std)
Europe - 230±10% Vac, 50/60 Hz
UK - 230±10% Vac, 60 Hz
Japan - 100±10% Vac, 50/60 Hz

ORDERING INFORMATION   Part Number

GPIB - Serial Interface with 115 VAC adapter	4896
GPIB - Serial Interface with 230 VAC adapter	(Specify country/plug style) -E (Europe), -B (UK), -A (Australia)
GPIB Accessary Cables	See Systems West Catalog
Rack Mounting Kits (holds 1 or 2 units)	Single - 114212, Dual - 114213