

# IEEE 488/GPIB Bus Interface

# 4894B

## ENHANCED GPIB ↔ Serial Interface

### DISCRIPTION

The Model 4894B is an enhanced bidirectional IEEE-488.2/GPIB to serial interface that can be used to adapt devices with RS-232 and RS-485 (RS-422) serial interfaces to the GPIB Bus. A 256 Kbyte RAM buffers up to 252,000 characters and frees the computer for other tasks while the 4894B transparently transfers data to or from the serial device. The 4894B's high speed DMA handshake transfers data at rates > 600 Kbytes/sec to minimize GPIB bus data transfer time. The 4894B's ability to run at any rate from 50 to 115,200 baud and in full or half-duplex mode makes it the ideal interface for driving modems, plotters, PLCs, RS-485 networks and other serial devices from the GPIB Bus. Can also be used to replace the National Instruments GPIB-232-CV or GPIB-485-CV interfaces.



4894B GPIB-to-Serial Interface

422/RS-485 differential signals and operates in full or half-duplex mode for compatibility with RS-485 network devices.

### G and S Modes

When used in the G-Mode, the 4894B is controlled by its GPIB interface and functions as a GPIB-to-Serial interface to adapt serial devices to the GPIB bus.

When used in the S-Mode, the 4894B is controlled from its serial port and operates as a Serial-to-GPIB controller for a single device. At power turn-on, the 4894B addresses the GPIB device to listen, passes the device any received messages, then reads any device data or responses and transmits them to the host computer.

### 4894/4894A Compatibility

In the G-Mode, the 4894B uses the GPIB Device Trigger command to switch from Data to the Command sub-mode. The older Model 4894s and 4894As used an Listen-Unlisten escape sequence which is not recommended with today's high-speed computers. All other functions and commands are identical.

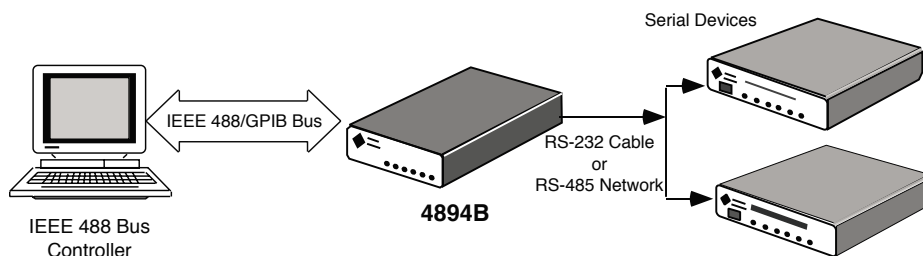
### Programmability

The 4894B's serial interface settings, SRQ generating conditions and GPIB address are programmable from the IEEE 488 Bus. The current configuration can be saved in E<sup>2</sup>ROM and becomes the user's power-on condition. A menu driven program is included with each unit to walk the first-time user through the configuration procedure. The 4894B can also be ordered with internal rocker switches to set the unit's configuration for use in applications without a bus controller (-8 option).

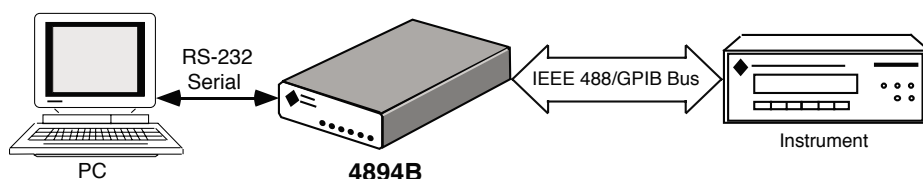
### Versatile Serial Interface

The 4894B's programmable serial interface includes both RS-232 single-ended and RS-

- Provides RS-232C single-ended and RS-422/RS-485 differential serial interfaces. *Compatible with all RS-232 devices and RS-422/RS-485 networks.*
- Expanded baud rate range from 50 to 115,200 baud *All standard rates.*
- Built-in 256 Kbyte RAM buffer for spooling data. *Large data memory.*
- Over 600 Kbyte/second GPIB data transfer rate. *DMA handshake speeds up GPIB data transfers.*
- Transparent data transfer. *Does not require data input/output commands.*
- Saves configuration settings in flash memory. *Configure unit without having to remove the cover.*
- Programmable replacement for the NI CV interfaces. *Upgrade to a 488.2 Interface.*



**G-Mode:** 4894B is a GPIB Interface for Serial Devices or for a Network



**S-Mode:** 4894B uses Serial Data to Control a GPIB Device



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# 4894B : SPECIFICATIONS

## IEEE 488 Bus Interface

The 4894B's 488 Bus interface meets IEEE STD 488.1-1987 and has the following capabilities:  
G Mode: SH1, AH1, T6, L3, SR1, PP0, DC1, RL0, DT1, C0 and E1/E2 drivers.

S Mode: SH1, AH1, T3, L2, SR0, PP0, DC0, RL0, DT0, C0 and E1/E2 drivers.

GPIB Addresses 0-30 primary addresses

### SRQ Generation

SRQs are generated if the unit is not addressed to talk, if SRQs are enabled and one of the following occurs:

488.2 Mode: Any combination of enabled ESR, STB, Operational or Questionable register bit(s). Includes data in Rx buffer, Rx message received, Rx buffer full, GPIB buffer empty and GPIB buffer full.

NI-CV Emulation Mode: GPIB buffer empty and data in serial buffer only.

### Escape Sequence

In G mode the 4894B powers up in the transparent Data sub-mode. Device Trigger is used to switch from Data to Command sub-mode. SCPI SYST:OPER DATA command is used to switch back to the Data sub-mode.

### 488.2 Common Commands

\*CLS, \*ESE, \*ESE?, \*ESR?, \*IDN?, \*OPC, \*OPC?, \*RST, \*SRE, \*STB, \*TST?, \*IST?, \*PRE, \*PRE?, \*PCB, \*SRE? and \*WAI

### Buffers

GPIB Input Buffer 220,000 bytes  
Serial Input Buffer 32,000 bytes  
Data Transfer Rate > 600 Kbytes/sec.

## Serial Interface

Provides RS-232C single ended or RS-485 (RS-422) differential signals on a DB-25S connector. Pin assignments conform to EIA RS-530 specification and are pin compatible with most RS-232 devices. Signal selection by internal jumpers.

### Baud Rates

All standard rates and any user rate from 50 to over 115,200 baud. Parser selects closest integer rate for non-standard baud rates.

### Data Character Formats

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

### Transmit Enable Modes

Full-duplex Transmitter always active.  
Half-duplex Transmitter tristated 0.2 ms after last character.

### Data Transfer Protocols

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

**Table 1 RS-232C Signals**

Pin#	Signal
1	Chassis
2	Transmit Data
3	Received Data
4	Request-to-Send
5	Clear-to-Send
7	Ground
8	Signal Detected
20	Data Terminal Rdy

**Table 2 RS-424/RS-485 Signals**

Pin#	Signal
1	Shield
2/14	Send Data
3/16	Received Data
4/19	Request-to-Send
5/13	Clear-to-Send
8/10	Signal Detected
20/23	Data Terminal Rdy

## Front Panel Indicators

PWR	Indicates power on
RDY	Unit has passed self test
TALK	Unit has recognized its Talk Address
LSTN	Unit has recognized its Listen address
BUSY	Blinks while receiving serial data
FULL	An internal data buffer is full

## Physical

### Size

7.45"L x 5.57"W x 1.52"H  
(18.92cmL x 14.15cmW x 3.86cmH)

### Weight

3lbs. (1.4kg.) including adapter

### Temperature

Operating -10 $\infty$  C to +55 $\infty$  C  
Storage -20 $\infty$  C to +70 $\infty$  C

### Humidity

0-90% RH without condensation

### Shock/Vibration

Normal handling only

Construction All metal case

Power 9 to 32 Vdc @ 3.5 VA

## Included Accessories

Instruction Manual

Support CD ROM

UL/CSA/VDE approved AC power

Adapters provided for:

US - 115 $\pm$ 10% Vac, 60 Hz (std)  
-E Europe - 230 $\pm$ 10% Vac, 50/60 Hz  
-B UK - 230 $\pm$ 10% Vac, 60 Hz  
-U Japan - 100 $\pm$ 10% Vac, 50/60 Hz

## Shipping Configuration

Unit factory configured for S mode prior to shipping unless specified otherwise. Customer may specify configuration at time of order.

## ORDERING INFORMATION

	Part Number
GPIB - Serial Interface with 115 VAC adapter	4894B
GPIB - Serial Interface with internal configuration switches and 115 VAC adapter	4894B-8
For 230 VAC adapter, add suffix to specify country/plug style) -E(Europe), -B(UK), -A(Australia) i.e. 4894B-E	
GPIB Cables with piggy-back and straight-in connectors. See separate data sheet	
Rack Mounting Kits (holds one or two units)	Single - 114210, Dual - 114211