

IEEE 488/GPIB BUS INTERFACE

4894B

ENHANCED GPIB ↔ SERIAL INTERFACE

488.2

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 when in the G mode. 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.



4894B GPIB-to-Serial Interface

S Mode

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.

Serial Interface

The 4894B's programmable serial interface includes both RS-232 single-ended and RS-422 / RS-485 differential signals and operates in full or half-duplex mode for compatibility with network devices.

Programmability

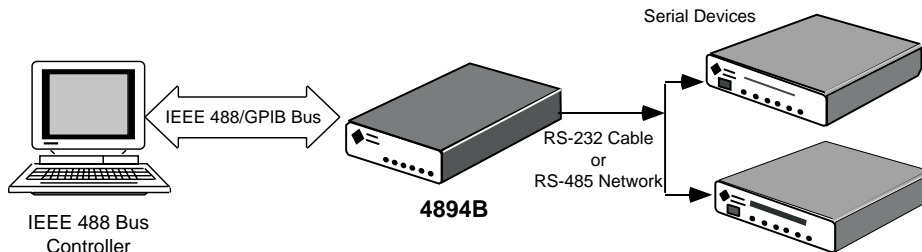
The 4894B's serial interface settings, SRQ generating conditions and GPIB address are programmable from the IEEE 488 Bus. The current configuration can be saved in E²ROM and becomes the user's power-on condition. A menu driven program is included with each unit to walk the first-time user through the 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.

4894/4894A Compatibility

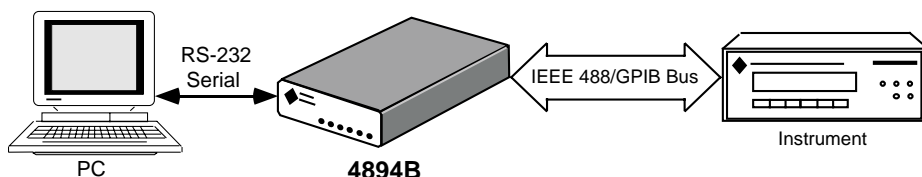
In the G Mode, the 4894B uses the GPIB Device Trigger command to switch from Data to the Command sub-mode. The older Model 4894s and 4894As used an Listen-Unlisten escape sequence which is not recommended with high-speed computers. All other functions and commands are identical.

- Provides RS-232C single-ended and RS-422/RS-485 differential serial interfaces, with half and full-duplex operation. *Compatible with all RS-232 devices and RS-485 networks.*
- Expanded baud rate range from 50 to 115,200 baud *All standard rates plus user set 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 GPIB and serial interface settings in an internal E²ROM. *Configure unit without having to remove the cover.*
- Small 1 U high, metal box design has CE approval *Small size with full EMI/RFI protection.*

 Approved



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

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∞ C to +55∞ C
 Storage -20∞ C to +70∞ 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

3.5 in 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

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 - 114710, Dual - 114711