IEEE 488/GPIB BUS SWITCHING

4842
GPIB BUS SWITCH AND MULTIPLEXER

Obsolete Product - Replaced by the Model 4842B

DESCRIPTION

ICS's 4842 GPIB Bus Switch is a GPIB controlled switch that enables several GPIB Controllers to share one or more GPIB device(s) or lets a single GPIB Controller operate multiple Bus systems. The 4842 is basically a GPIB controlled A-B-C switch for the GPIB bus. As a Multiplexer, the 4842 lets multiple Bus Controllers connected to the numbered ports share the common bus and any devices attached to it. When used as a Bus Switch, the 4842 lets a GPIB Controller connected to the common port select and control devices attached to the numbered ports. Figures 1 and 2 show these two operating modes.
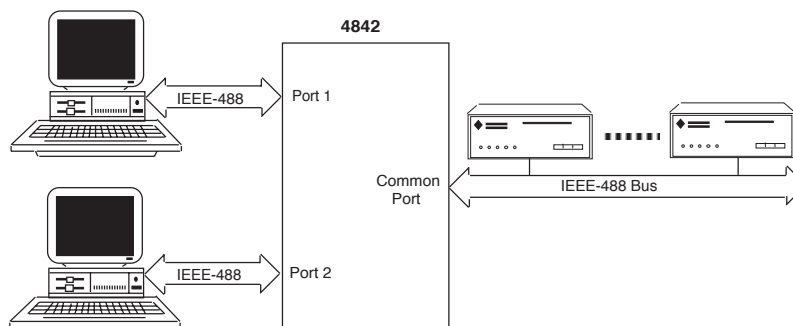
4842 Bus Switch

No System Degradation

The Model 4842 does not degrade the performance of the highest speed GPIB bus systems. Maximum signal delays are less than 15 nanoseconds from port-to-port. Data trasfer is completely transparent with data transfer rates in excess of 2 Mbytes/second.

Multiplexer Operation

In Multiplex mode, the 4842 connects a controller on any numbered port to the common port. Query and status reporting commands let any Controller determine the 4842's current switch position. If the 4842's common port is busy, the 4842 will accept reservations and SRQ the Bus Controller when the common port is available. An Override command gives any Controller instant access to the common port. When done, the common port can be switched back to another Controller. The power-on default port is set when the current configuration is saved.

Switch Mode SRQ Handling

In the Bus Switch mode, the Bus Controller selects the port without any contention. The 4842 can be set to notify the Bus Controller whenever a device on any port requests service. SRQs from all numbered ports are copied into bits in the 4842's Status Register. If the corresponding SRE bit(s) are enabled, the 4842 generates an SRQ on the common port. The Bus Controller may serial poll the 4842 to learn which buses have SRQs and then switch to that bus to service the device requesting service.

IEEE-488.2 and SCPI Compatibility

The Model 4842 is an IEEE-488.2 compatible device and uses the SCPI commands recommended for Signal Switching devices. For compatibility with ICS's earlier Model 4840 Bus Switch, the Model 4842 also executes the 4840's short form commands.

- Operates as a 1:2 or 1:3 bus switch, permitting a single controller to operate three IEEE 488 Bus systems and up to 39 devices. *Expands the number of instruments beyond the IEEE 488 limits.*

- Operates as a 2:1 or 3:1 multiplexer so up to three bus controllers can share a common IEEE 488 bus, instruments, or GPIB peripherals. *Time-shares expensive equipment.*

- Cascadeable for large system applications. *Easy expansion to nine buses*

- High data-transfer rate and minimum signal delays. *Does not degrade system performance.*

- Each bus controller can poll the 4842's status to determine availability of shared instruments or peripherals. *Find out what's happening on the remote bus.*

- Reservation stack with automatic SRQ to next controller. *Reserves your turn with the shared equipment.*

- IEEE-488.2 compatible unit uses SCPI commands. *Uses standardized commands for easy programming.*

CE Approved

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Figure 1 - As a 2:1 or 3:1 multiplexer, the 4842 permits up to three IEEE 488 Bus controllers to timeshare a common bus and devices.

IEEE 488 Bus Interface

Each port meets IEEE STD 488.1-1987 and is compatible with all IEEE 488 Bus commands. Loading is one GPIB load per numbered port.

Address Capability
Primary addresses 0-30

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

SCPI Commands
Used to set and query all programmable functions. The 4842 conforms to SCPI 1995.0 Specification.

SCPI Command Set

ROUTe
  :CLOSe <port> closes common port to any port
    :OVERride immediate connection
  :CLOSe? queries connections
  :OPEN opens common port
  :REServe reserves connection
SYSTem
  :VERsion? queries SCPI version
  :WAIT <msec> sets reservation wait time

Signal Pass-thru Specifications
  Bidirectional data transfer for all bus signals. SRQs combined to generate an SRQ on the common port

Signal delay   5 ns max.
Data handshake delay   10 ns max.
Handshake rate   >2 Mbyte/s.
Parallel poll delay 10 ns max.

Switch Characteristics

Switch 'on' resistance   <5 ohms
Switch response   <24 ms

4840 Compatible Commands

Command	Meaning
C	If idle, connect the addressed port to the common bus port
Cn	If idle, connect the common bus port to the selected bus port *n* (*n*=1 to 3)
D	Disconnect the addressed port from the common bus port (mplx mode only)
R	If busy, add the addressing port to the internal reservation stack
OVR	Immediately connects the addressed port to the common port and disconnects any other port-to-port path
Sn	SRQ Bit Enable Mask enables a Serial Poll response bit n to generate an SRQ interrupt on the common bus, or disables it from doing so. (0 >=n>=255)
@	Requests a program revision message

Power turn-on configuration is set by saving the current configuration in EEPROM. The saved configuration is restored at power turn-on.

Front Panel Indicators

PWR   Indicates power on
RDY   Unit has passed self test
TALK   Unit is addressed to talk
LSTN   Unit is addressed to listen
PORT 1   Connected to Common Port   PORT 2 Connected to Common Port   PORT 3 Connected to Common Port
ERR   Unit has detected a command error

Controls

POWER   Front panel switch
RESET   Front panel button
ADDRESS   Rear panel GPIB addr.
MPXR   Rear panel mode select

Physical
Size, W x H x D
  8.5 x 3.47 x 11.0 inches
  (21.6 x 8.8 x 27.9 cm)

Weight
  5.5 lbs. (2.5 kg)

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

Power
  80-130/160-260 Vac ± 10%, 48-62 Hz,
  10 Watts max.

BUS SWITCH CONFIGURATION

ORDERING INFORMATION

	Part Number
IEEE 488 Bus Switch, 2 ports (Common plus ports 1 and 2)	4842-12
IEEE 488 Bus Switch, 3 ports (Common plus ports 1, 2 and 3)	4842-13
Power: 115 Vac standard. For 100 Vac, specify Option -J1; for 200 Vac, -J2; for 230 Vac,-E.	No charge