4842

DESCRIPTION

The Model 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. 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. When used as a Multiplexer, the 4842 lets Bus controllers connected to the numbered ports share the common bus and any devices attached to it. Figures 1 and 2 show these two operating modes.

Service Request Handling

In the Bus Switch mode, 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.

No System Degradation

The Model 4842 does not degrade the performance of the highest speed GPIB bus systems. Data transfer through the 4842 is totally transparent. Maximum signal delays are less than 10 nanoseconds from port-to-port. Data transfer rate for the Model 4842 exceeds 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 status or comand results. 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.

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

BUS SWITCH CONFIGURATION

4842

Port 1 · IEEE-488 Bus
Port 2 · IEEE-488 Bus
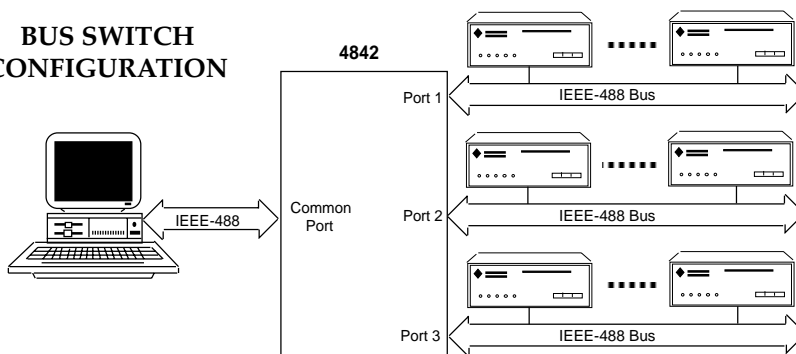Port 3 · IEEE-488 Bus

Common Port · IEEE-488

Figure 1 - As a 1:2 or 1:3 bus switch, the 4842 permits a single IEEE 488 Bus controller to operate up to three GPIB buses, expanding the controller's drive capabilities to 39 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 <numeric>
              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  <numeric>
              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 $\pm$ 10%, 48-62 Hz, 10 Watts max.
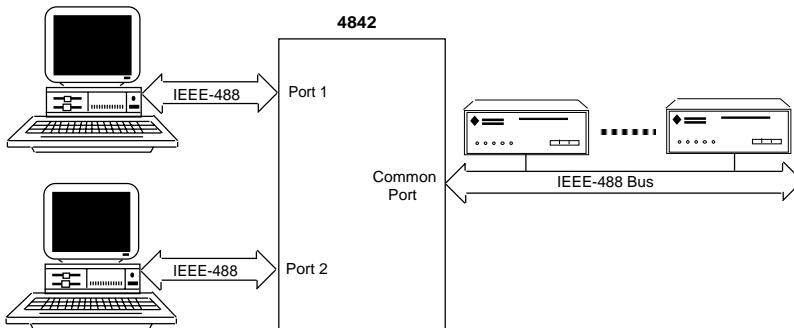
MULTIPLEXER CONFIGURATION

Figure 2 - 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.

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