Universal Switching Corporation

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General

Large scale communication installations require State-of-the-Art equipment. The 10948B provides the systems professional with an uncompromising combination of high performance and high reliability switching elements coupled together for DC-18GHz performance. Standard redundant power supplies plus redundant system control interfaces deliver the ultimate in system reliability for critical applications

Compact and high performance, the Model 10948B provides cost effective, flexible switching capacity for smaller installations, providing 4 channels of A/B (primary or backup) switching. It is also provides both 1:1 or 1:4 modes. The 1:1 mode provides individual control of each transfer relay while the 1:4 mode controls all four transfer sections at the same time.

Complete control and status of the unit is available at both the front panel controls or the dual remote interface. Also provided with the unit is a direct TTL alarm input connector for direct channel selection and an 8-bit driver port for controlling external devices. The unit is available with dual serial ports with provision for the user to self-configure the serial mode of the individual ports (RS-232C, RS-422A or RS-485), or also available with a single serial port plus Ethernet (10/100BaseT).

Applications

- Communication installations
- Airborne surveillance systems
- Digital broadcast facilities or production studios
- Imaging and animation production facilities
- Antenna routing for transmit or receive
- Security or remote systems control
- Site automation monitoring

Features

- High reliability relays
- Four channels of A/B backup switching
- Dual mode, 1:4 or 1:1 included
- True DC-18GHz bandpass switching
- SMA signal connectors
- Redundant hot-swap power supplies
- Dual serial control ports plus, or Ethernet & one serial
- Field configurable serial ports (RS-232C/422A/485)
- International AC power input
- Certified CE EN61010 (LVD)
- LabVIEW drivers available
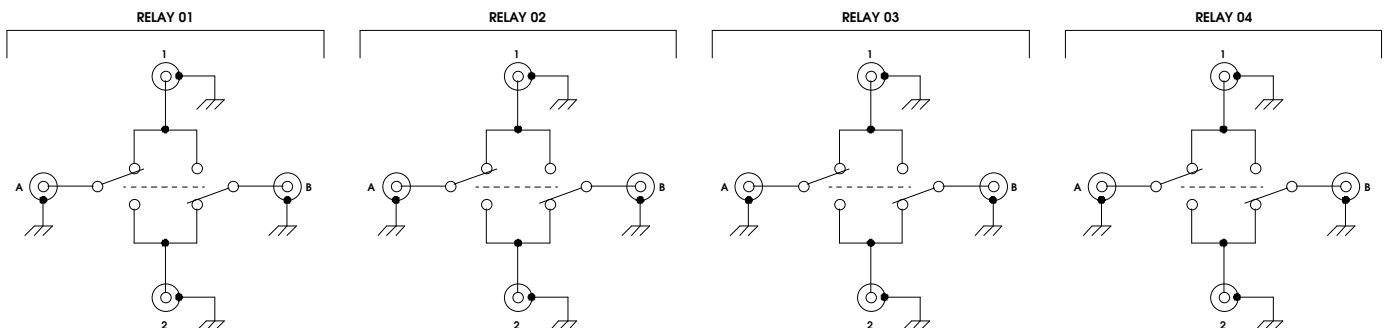- TTL alarm inputs port and programmable driver output

Front View

Rear View

Signal Diagram

RELAY 01   RELAY 02   RELAY 03   RELAY 04

10948B-001

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Front Panel Features

The front of the unit provides a host of features in a compact panel height. Channel selection and the back-up mode (1:1 or 1:4) can be controlled here by front panel color-coded LED illuminated control keys. A high contrast vacuum fluorescent display also displays status and control messages.

For easy access, front panel installed redundant hot-swap power supplies are included. These supplies are constantly monitored by the unit for proper operation and installation.

Bi-color LED's on each supply can easily identify a defective power supply unit.

Bi-color status LED's are integrated at the front panel. These are for the J8 alarm input port, serial receive and transmit activity, lithium battery monitor, and general error conditions. Errors are displayed on the front panel display, and an error code is also sent via the serial ports.
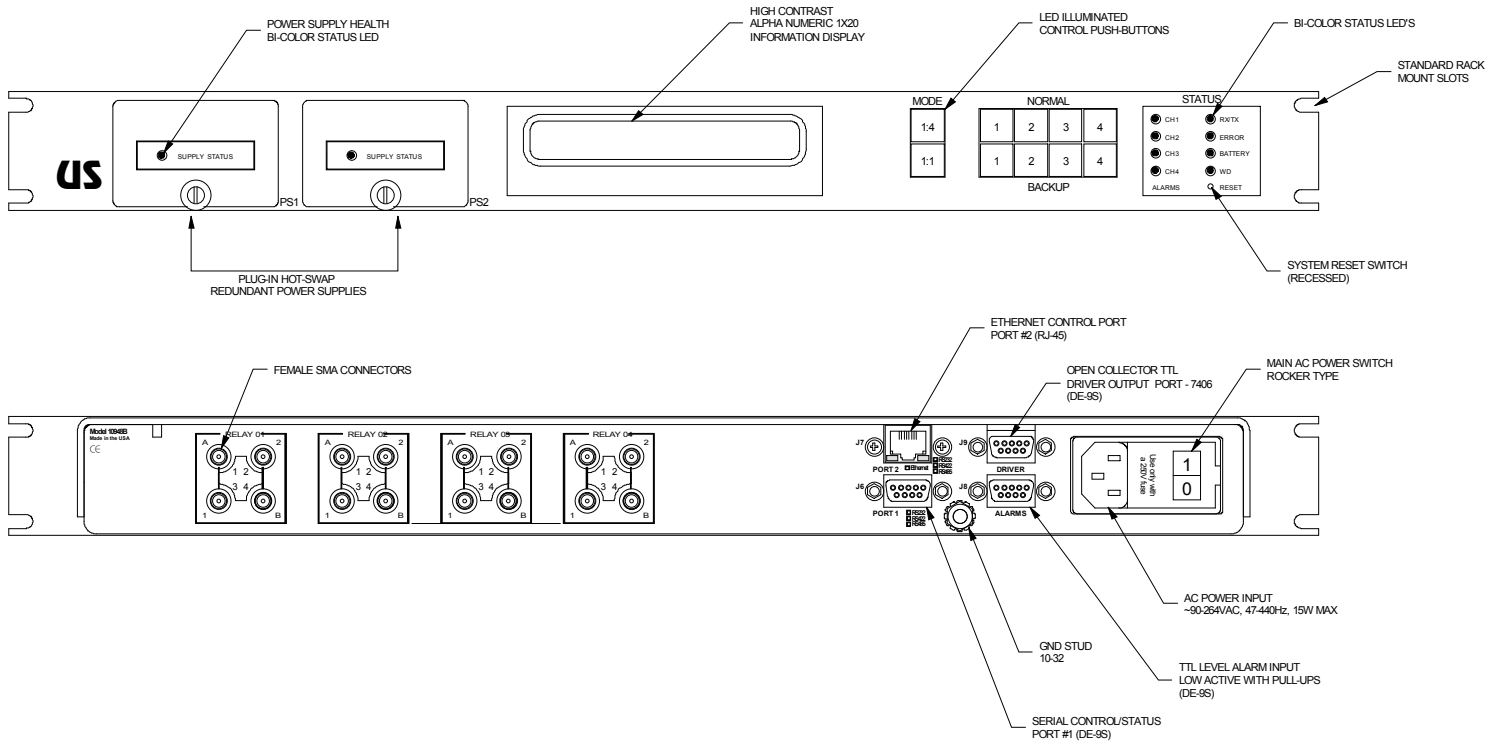

Choice Serial Port Type

The unit is available with two control configurations. It is factory configured with either dual serial ports (RS-232C/422A/485 serial interfaces), or with a single serial port plus an Ethernet port (shown above). The factory delivered serial interfaces are defined by the model number assignment. The user can easily change the shipped serial configuration by simply removing the cover and changing the configuration jumpers. Either or both supplied serial ports can be used to control and monitor the unit. Data to the ports is serviced on a first-come, first-served basis. Many operating parameters of the unit, such as baud rate, can be modified via the serial ports. See page 4 about the Command Protocol for more detail.

8-Bit Driver Port

The 10948B includes an 8-Bit open-collector driver output port (J9) that the user can write to via either of the serial interface ports. The output can be used to drive user indicators or other equipment.

Alarm Input Port

A direct alarm input port (J8) is provided for TTL compatible control of the units four channels. Four active-low inputs allow the user to select the back-up mode for the associated input port.

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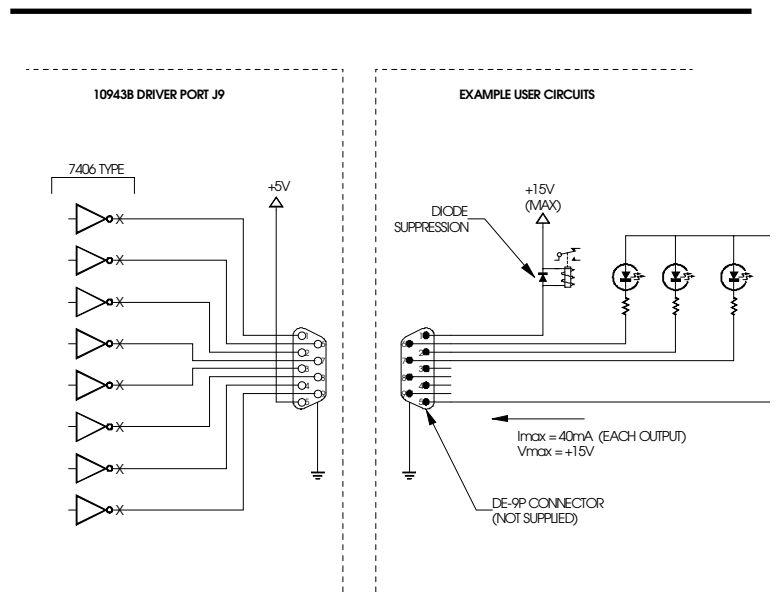
High Performance Transfer Sections
Model 10948B

Four Channel System

The Model 10948B backup A/B selector system offers a high performance, low cost solution to your back-up switching needs providing a total of four channels of backup switching (A1-B2, or A2-B1). An additional capability provides flexibility so the unit may be configured for either 1:1 switching (individual transfer relay control), **or** 1:4 switching where all four transfer relays are gang-controlled together. The switching mode is selectable from either the front panel controls or the remote interface.

Control options and switching configurations are stored in non-volatile memory (lithium-backed RAM). Under power up procedures, the unit may be set to recall the last configuration since power down, or to completely clear all crosspoint connections. If main power is lost to the unit, all sections fall back to the "A1-B2" connection position until main power is again restored.

Model Number Assignment

The 10948B is available in six standard configurations. The model number specifies the "shipped" serial interface factory configured (can be changed in the field).

NOTE: The "shipped" interface type can be easily change via configuration jumpers under the top cover if control needs change.
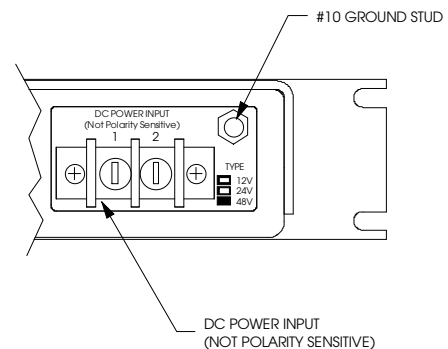
	Model Number	Interface	Capability	Conn
■	10948B-D232	Dual RS-232C	1:1 & 1:4	SMA
■	10948B-D422	Dual RS-422A	1:1 & 1:4	SMA
■	**10948B-D485**	**Dual RS-485**	**1:1 & 1:4**	**SMA**
■	**10948B-SE10**	**Ethernet & RS-232C**	**1:1 & 1:4**	**SMA**
■	10948B-SE10-A	Ethernet & RS-422A	1:1 & 1:4	SMA
■	10948B-SE10-B	Ethernet & RS-485	1:1 & 1:4	SMA

NOTE: Popular models are shown in BOLD.

DC Powered Option

The 10948B may also be ordered so it can be powered by DC voltage instead of by a normal 90-264VAC power source. The rear panel power connection includes a two position screw terminal and a chassis ground stud. Contact the factory for more information.

Suffix	DC Input Range	Max Current
-4	36-75VDC	1.50A
-2	18-36VDC	2.20A
-1	9-18VDC	3.75A

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Command Protocol

The control command protocol for the 10948B is simple and stream-lined, yet powerful and comprehensive for a switch of its size. All commands are standard ASCII strings, and must be terminated with a <CR>. The "x"s below represent digits specific to the command. The following commands are available:

Bx	Connect a backup port to an output port (backup)
Nx	Disconnect a backup port from an output port (normal)
Vx	Verify the status of a backup connection
Sxx	Store switching configuration
Rxx	Recall switching configuration
CLR	Clear all backup connections
Pxxxx	Set backup priorities for the 1:4 mode
Hx	Set backup mode (1:1 or 1:4)
DL	Download switch configuration
RST	Reset the system to default
ER?	Error status request
VER	Request for firmware version
SON	Enables unsolicited error attention message "ER!"
SOF	Disables unsolicited error attention message "ER!"
Ixx	Sets the baud rate of the serial communication port
LCK	Locks the front panel controls
UNL	Unlocks the front panel controls
BPx	Controls conditions for internal beeper usage
RON	Enables the system AutoRestore mode
ROF	Disables the system AutoRestore mode
Axx	Changes the factory default RS-485 address
Oxxx	Outputs to the TTL driver port binary equivalent of "xxx"

Version 1.01 Firmware

Units with firmware version 1.01 (or higher), also has a third command mode added; 2:2 mode or "H2". In this mode, commands to ports 1 and 2 will actuate ports 1 and 3, or 2 and 4 (respectively) in a ganged fashion. See the manual for additional information.

Serial Pin Assignment

RS-232C

Pin	Function	Designation
1	Not Used	
2	Transmit Data	TXD
3	Receive Data	RXD
4	Not Used	
5	Signal Ground	GND
6	Not Used	
7	Clear To Send	CTS
8	Ready To Send	RTS
9	Not Used	

RS-422A

Pin	Function	Designation
1	Transmit Data (-)	TXD -
2	Transmit Data (+)	TXD +
3	Receive Data (+)	RXD +
4	Receive Data (-)	RXD -
5	Signal Ground	GND
6	Clear To Send (-)	CTS -
7	Clear To Send (+)	CTS +
8	Ready To Send (+)	RTS +
9	Ready To Send (-)	RTS -

RS-485 Multidrop

Pin	Function	Designation
1	TR Data (-)	485 -
2	TR Data (+)	485 +
3	Not Used	
4	Not Used	
5	Signal Ground	GND
6	Not Used	
7	Not Used	
8	Not Used	
9	Not Used	

Model 10948B Specifications

Array size	Four A/B transfer channels
Switching mode	1:1 or 1:4 backup capacity
Switching elements	High reliability relays
Type of system	A/B backup or transfer selector
Architecture	Fixed size
Termination	None
Signal connector location	Rear panel

I/O Characteristics

Impedance	50 ohm
VSWR loss (1:1 mode)	<1.5:1 @ 18GHz
Signal connector	SMA female
Coupling	DC

Signal Characteristics

Transmission loss	<0.25dB @ 4GHz
	<0.50dB @ 18GHz
Isolation	>80dB @ 4GHz
	>60dB @ 18GHz
Signal path	Passive bidirectional

General Specifications

Switching speed	<20mS
Power supply section	Hot-Swap redundant supplies
Power supply monitoring	Included
Remote control interfaces	Serial (RS-232C, RS-422A or RS-485 multi-drop)
Ethernet port	10/100BaseT
Serial port connectors	DE-9S (D-Type female)
Alarm connector (J8)	DE-9S (D-Type female)
Driver output connector (J9)	DE-9S (D-Type female)
Status LED's	Front panel
Front panel display	1x20 VF display (high contrast)
Configuration memory	Lithium-back RAM
Memory retention	>10 years
Cooling	Convection
AC power requirements	90-264VAC, 47-440Hz, 45Watts (max)
Fuse protection	2A, 5mm (dual), AC models only
Weight	12 lbs
Size	1.75H x 6.50D x 19.00W (1RU)
Operating temp	0 to +60C
Non-operating temp	-20 to +85C
Humidity	0 to 95% (NC @ +25C)
MTBF	>55,000 hours
Contact life	>1,000,000 (per port)
Warranty	2 years
Certifications	CE EN61010