

This document facilitates operation of the SKB fiberoptic switch module. Note that the only difference between the SKB variant described by this document and the standard SKB is the type of connector. Information concerning pin assignment of the SKB should be taken from this document only. Please disregard the information on this subject contained in the SKB user's manual. Should you have any questions regarding the following information, please contact JDS Uniphase directly at (613) 727.1303, or by fax at (613) 727.8284, or via e-mail at instruments@jdsuniphase.com, or visit our web site at www.jdsuniphase.com.

Functional Notes

1. The SKB can be operated as an SK switch. Refer to notes in this document describing SK emulation.
2. The pins allocated to SK emulation are located in the center portion of the 2x25 connector allowing direct ribbon cable drop-in to existing applications.

Pin Assignment

The SKB switch pin assignment has been updated from the existing SK switch pin assignment, the primary differences are as follows:

1. D7 will be added to the interface.
2. /SOP and R/W will be added to the interface.
3. /RESET now called HOME.
4. /RESET added to provide a hardware reset.

Table 1: Phase II SKB Serial/Parallel Pin Assignment

PIN	SIGNAL	DESCRIPTION
1-8	NC	No connect
9	/SOP	Start of packet
10	R/W	Read/write
11	/RESET	This is a micro controller unit (MCU) reset
12	RESERVED	For internal use only
13	GND*	Shield
14	DGND**	Digital ground, RESERVED FOR SK EMULATION
15	BUSY	Busy output: low=idle, high= switching
16	D0	Data line 0
17	ERROR	SK emulation: reset error output low = normal, high = switch mechanism position check failed (channel position is verified when SK switch is reset) SKB: ERROR asserted indicates an error code in the SKB error queue
18	D1	Data line 1
19	GND*	Shield
20	D2	Data line 2
21	GND*	Shield
22	D3	Data line 3

PIN	SIGNAL	DESCRIPTION
23	GND*	Shield
24	D4	Data line 4
25	/STROBE	/STROBE input, active low: a high to low pulse = read data lines; a high = ignore state of data lines. This line is internally pulled high via 10 K ohm resistor to 5 VDC. For the SK emulation the home line is also read in via the STROBE signal
26	D5	Data line 5
27	GND*	Shield
28	D6	Data line 6
29	GND*	Shield
30	/HOME	Home input: low sends the switch to the home position in SK emulation mode (Replaces RESET line in emulation mode)
31	GND*	Shield
32	DGND**	Digital ground, RESERVED FOR SK EMULATION
33	+5 VDC **	RESERVED FOR SK EMULATION
34	D7	Data line 7
35	+5 VDC **	RESERVED FOR SK EMULATION
36	+5 VDC **	RESERVED FOR SK EMULATION
37	NC	No connect
38	NC	No connect
39	RXTX-	Transmit/receive data negative side (A)
40	RXTX+	Transmit/receive data positive side (B)
41	Bus Enable	Active high parallel bus enabler
42	485 Shield	RS485 signal shield
43	Trigger	Active low trigger signal, TTL multi-dropped, pulled UP at slave with 100K
44	Attention	Active low attention signal, open collector, pulled UP at master with 470 Ohms
45-50	NC	No connect

*Note that GND (shield) signal lines should be connected to the common ground.

**Note that these pins are allocated to SK emulation. These pins should not be used during SKB operation, unless the power pins (listed in table 3) are NOT connected.

Line Functionality

/SOP Input Line

The /SOP line provides a data packet start/stop mechanism for enhanced mode.

Transition of the /SOP line from a high-to-low state indicates the beginning of a data and all subsequent bytes strobed are considered data packet bytes. Transition of the /SOP line low-to-high indicates the end of a data packet. The master is responsible for controlling the /SOP line.

This line is used as a means to distinguish between SKB enhanced operation and SK emulation mode. The /SOP line is used when enhanced parallel mode operation is desired. In SK emulation mode, this line should be pulled high, or not connected (this line is pulled high by default on the SKB).

D0 -- D7 Bi-directional Data Lines

SK emulation: valid channel numbers are strobed-in for the first motor are presented on the data lines D0 to D6 in 7-bit binary format and parsed by the SKB on high-to-low transitions of the STROBE line.

Enhanced mode: valid packet bytes presented on the data lines D0 – D7 in 8-bit binary format and subsequently strobed-in to the SKB on high-to-low transitions of the STROBE line, when the /SOP line is held low. Data direction is determined by the state of the R/W line.

Table 2: Data Line Format

/SOP	/HOME	D7	D6	D5	D4	D3	D2	D1	D0	channel #
SK Emulation										
1	0	x	x	x	x	x	x	x	x	0 (home)
1	1	x	0	0	0	0	0	0	0	1
1	1	x	0	0	0	0	0	0	1	2
1	etc	x	0	0	0	0	0	1	0	3
1	etc	x	etc	etc	etc	etc	etc	etc	etc	etc
1	1	x	1	1	1	1	1	1	1	128
Enhanced Mode										
0	x	0	0	0	0	0	0	0	0	0
0	x	0	0	0	0	0	0	0	1	1
0	x	0	0	0	0	0	0	1	0	2
0	x	etc	etc	etc	etc	etc	etc	etc	etc	etc
0	x	1	1	1	1	1	1	1	1	255

Notes:

1. The value 0 indicates that the input should be set low (i.e., < 0.8 VDC).
2. The value 1 indicates that the input should be set high (i.e., ≥ 2 VDC).
3. The 'x' symbol indicates a "irrelevant" condition.
4. Home is represented by RESET.

/STROBE Input Line

In SK emulation mode the /STROBE line is used to select new channel positions. A high-low transition of the /STROBE line initiates a read of the data lines D0-D6, which is used to build a 7-bit data byte, which is subsequently interpreted as a channel number of on the first motor.

A change on the data lines has no effect until there is a high-to-low transition on the /STROBE line. In emulation mode, a change on the /HOME line also has no effect unless it is held low while the /STROBE line has a high-to-low transition.

In enhanced mode, the /STROBE line is used to signal the SKB to read data from or write data to the data lines. A change on the data lines has no effect until there is a high-to-low transition on the /STROBE line. The /STROBE line is driven by the master for both transmit and receive operations.

R/W Input Line

The R/W line is only used in enhanced mode. The R/W line is driven by the master as a bus direction control. If the R/W line is driven LOW, /D0-/D7, /SOP and /STROBE line transitions are interpreted as output operations from the master to the slave. If R/W is driven high, operations are interpreted as output from the slave to the master.

In SK emulation mode the R/W line must be low to write data to the SKB. Note that this line is pulled low by default within the SKB.

/HOME Input Line

This line is used in emulation mode. The /HOME line overrides the data lines. A low on this line forces the SK switch to go to the HOME position and verify the previous channel position. After this has occurred the SK common stays in the home position. Note the /HOME must be strobed-in using the /STROBE line. Changes on the /HOME line have no effect until a high-to-low transition occurs on the /STROBE line.

This line is called RESET on the SK product.

/RESET Input Line

Reset resets the MCU. This is a “hard” reset of the SKB module. All communication interfaces will be reset.

BUSY Output Line

In SK emulation mode, the BUSY line provides an indication of the switching mechanism state. The line is LOW when the switch is idle and HIGH while the switching mechanism is moving to an output channel.

In enhanced mode, the BUSY line provides a flow control mechanism. The slave drives the BUSY line high after each byte is strobed in. The master will not toggle any lines until a high-to-low transition of the BUSY line is detected.

ERROR Output Line

In SK emulation mode the ERROR line reports the result of the self-test operation that occurs whenever the SK switch is reset. If the test fails, the ERROR line goes high and stays high until a self-test operation is invoked again (assuming the self-test passes on the next attempt). The error most often indicates a mechanical fault. If an invalid channel (out of range channel) is strobed in the error line will go high and stay high until a valid channel is strobed-in.

In the SKB enhanced mode the ERROR line is used to flag the master if the slave detects an error. When the error line is high this indicates that there is an error in the error

queue. The ERROR line is driven low when the errors are read out of the error queue or the error queue is cleared.

Power Interface

The SKB switch is powered through a single 4 pin connector. The pin assignment is shown in Table 3. In the case of SK emulation, the power connector is not necessary when there is less than 8 inches of cable.

Table 3: Phase II Power Pin

PIN	SIGNAL	DESCRIPTION
1	-	Reserved
2	GND	Ground
3	NC	No connect
4	+5V	5 volts supply in

Connector Information

The connector on the SKB switch is an IDE, 50(2x25) male + 4 male power, PCB, edge-mount connector, (Comm Con P/N 7514).

The recommended mate for SKB operation is an IDE, 50(2x25) female + 4 female power, right angle connector (Comm Con P/N 7510).

The recommended mate for SK emulation is a 2x13 female ribbon connector. For details on pin numbering and connector dimensions, please refer to Figures 1 and 2 respectively. For further information about connector specifications, please contact:

Comm Con Connectors, Inc.
1848 Evergreen Street, Duarte, CA 91010
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Figure 1: The IDE 2x25 Connector on an SKB Switch

