# Datasheet

# SK810 *Tarn* Interfaces Controller

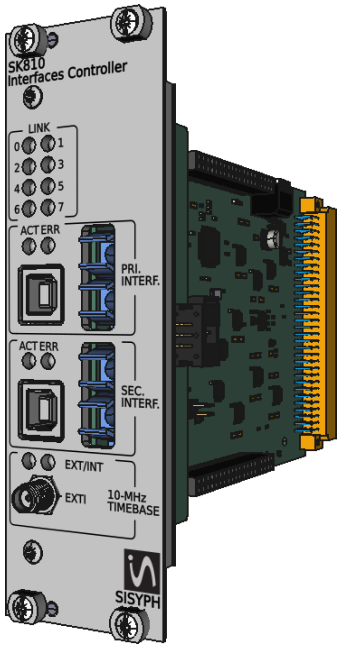
## SK-Series Modules

## Features

- Communications with 8 instruments from the SK-Series.
- USB and optical cables interfacing
- Remote interface monitoring
- Complete isolation from the host computer
- 10 MHz timebase
- Power supply monitoring

## Applications

- Communications bridge to connect up to 8 modular instruments installed in a SPK-Platform.




## General Description

### Overview

The SK810 *Tarn* Interfaces Controller is a communications bridge to connect up to 8 modular instruments of the Sisyph SK-Series. Two interfaces are provided for the host computer to communicate with the instruments *via* USB or optical cables. The SK810 is designed as a sub-system of the SPK-Series Platform where the modular instruments are installed. The SK810 also provides clock synchronization, individual module status and power supply monitoring. The SK810 uses a link framework for providing communications between the host computer and the downstream instruments assembled in a SPK-Series Platform. When communications are sent *via* the optical cables, complete electrical isolation between the host PC and the instruments can be achieved. Likewise, digital isolators are used to reduce ground-loops induced noise resulting from the connection of the USB ports to the remote computer.

## Functional Block Diagram

Refer to the *Functional Block Diagram* available online for a synthetic presentation of the SK810.

## User's Guide

The last version of the SK810 *User's Guide* is available online at the product page.

## Programming Guide

The online *Programming Guide* provides a detailed description of the SK810's remote commands.

## Communications

The SK810 uses a link framework for communications between the host computer and the downstream instruments assembled in a SPK-Series Platform. In this model, when a link is established, the Primary interface is linked to a single instrument : data bytes received from the Primary interface are relayed directly to the instrument and response data are relayed back to the Primary Interface. The Secondary interface, which can not be linked, remains available for regular commanding to the SK810. This interface can be used to reconfigure the SK810 or to query the status registers, or any other command documented in the *Programming Guide*.

## Isolation

When communications are sent *via* optical cables, complete electrical isolation between the host PC and the instruments can be achieved. Likewise, digital isolators are used to reduce ground-loops induced noise resulting from connections between the USB ports and the remote computer.

## Timebase

The SK810 provides a 10-MHz clock to the modules for optional synchronization. Indeed, by synchronizing clocks, low-frequency mixing products (beat tones) of independently running module clocks can be avoided. An external clock signal can be used instead of the internally generated one.

## Power Supply Monitoring

The SK810 provides the user with monitoring the power supply voltages distributed through the backplane. An under-voltage detector operates from these measured values to determine whether a power supply's level is too low for a safe operation of the instruments.

## Host Interfaces

Two interfaces can be used to communicate with the modular instruments installed in the SPK-Platform. The Primary Interface provides the user both with commanding the SK810 with regular commands and linking the host computer with one instrument. The Secondary Interface, which can not be linked, is used for querying the SK810' registers or for reconfiguring its operation. Both interfaces provide USB and optical ports for connecting the host computer.

## Front-Panel Display

The front panel of the SK810 provides the user with minimal information about the status of the remote interfaces and the linked slot.

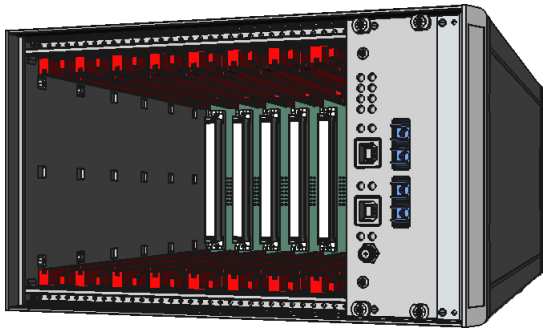


**Figure 1:** Using the SK810 with the SPK-Series Plaforms. The Interfaces Controller module is shown installed ina SPK42 platform. It provides the user with interfacing up to 8 instruments (not shown here). The SK810 is inserted in its dedicated slot, which is always located at the rightmost position.

# Specifications

## Timebase

**Internal**

| | |
|---|---|
| Frequency | 10 MHz. |
| Tolerance | ±10 %. |
| Stability | ±10 ppm/K. |

**External**

| | |
|---|---|
| Frequency | 10 MHz. |
| Input Imp. | 50 Ω, AC-coupled. |
| Input Level | +10 dBm. |
| Interface | Front-panel SMA connector. |

**SYNC backplane lines.**

| | |
|---|---|
| Output Level | 5-V HCMOS logic levels.<br>Differential pair. |
| Output Imp. | 100 Ω series. |

## Host PC Communications

**USB and optical interfaces.**

| | |
|---|---|
| UART format | 9600 Baud or 115 200 Baud,<br>8-bit data,<br>1 stop-bit,<br>No flow control. |

## Power Supply Monitoring

**Internal**

| | |
|---|---|
| Nominal Level | ±15 V, ±5 V and 24 V. |
| Threshold | −10 % below the nominal level. |

**PWRGOOD backplane line.**

| | |
|---|---|
| Output Level | Open-drain. |
| Output Imp. | 1 kΩ series. |

## Backplane Communications

**RX, TX, /CTS, /RTS and /STATUS backplane lines.**

| | |
|---|---|
| Modules | 8 slots are addressable. |
| I/O Level | 5-V HCMOS logic levels. |
| UART format | 9600 Baud,<br>8-bit data,<br>1 stop-bit,<br>No flow control. |

# General Characteristics

*This module is designed to be operated in laboratory environment.*

## Operating Temperature

| | |
|---|---|
| Range | +15 °C to +40 °C. |

## Host Interfaces

| | |
|---|---|
| USB Port | USB 2.0 type B receptacle (2x). |
| Optical Port | Avago Versatile Link, duplex, non-latching receptacle (2x). |

## Connectors

| | |
|---|---|
| Backplane | DIN41612 96C male. |
| Ext. Timebase | SMA front-panel. |

## Front Panel Indicators

| | |
|---|---|
| Pri. Interface | Error, Activity. |
| Sec. Interface | Error, Activity. |
| Linked Slot | SLOT#0 to SLOT#7. |
| Timebase Src | External input, internal clock. |

## Power

Module powered through the backplane connector.

| | |
|---|---|
| Digital | +5 V × 50 mA. |

## Printed Circuit Board

| | |
|---|---|
| Form factor | Eurocard. |
| Dimensions | 100 × 160 × 1.6 mm. |
| Technology | 4-layer FR4. |

## Physical Properties

| | |
|---|---|
| Height | 128.4 mm (3U). |
| Width | Double-wide, 40 mm (8HP). |
| Depth | 174.5 mm. |
| Weight | ≈ 200 g. |
| Front-Panel Material | Anodized aluminium with rear conductive. |

## Warranty

One (1) year parts and labor on defects.

# Ordering Information

## SK810 Module

The SK810 module can be ordered with different options.

| Ordering Code | Front Panel Options |
|---|---|
| SK810-FP | Shielded 3U-8HP front-panel (standard). |
| SK810-NP | No front-panel. |

## Accessories

Accessories and optional parts described in this section are not included in the SK810's package and must be therefore ordered separately if required.

### Optical Cables

Two optical cables are required for connecting both Primary and Secondary Interfaces. Standard length is 2 m or 10 m. Contact us for specific dimensions.

### USB Cables

Two USB cables are required for connecting both Primary and Secondary Interfaces. Standard length is 1 m.

### USB-to-Optical Bridge

The SM301 *Nemausus* is an USB-to-optical bridge for connecting the fibres to the remote computer side. It is powered from the USB port used for the communications with the PC and features a pair of receptacles for the fibres (RX and TX), providing the user with connecting one optical cable to the SK810 *Interfaces Controller*. Two SM301 are required for connecting both Primary and Secondary Interfaces.

| Ordering Code | Description |
|---|---|
| SCM071 | 3-m optical cable, single (RX,TX) pair, Broadcom MPN: HFBR-RMD003Z. |
| SCM072 | 10-m optical cable, single (RX,TX) pair, Broadcom MPN: HFBR-RMD010Z. |
| SCM841 | USB 2.0 cable, type A male to type B male, 1 meter length, TPE jacket. |
| SM301 *Nemausus* | USB-to-Optical Bridge. |

## Document Identifier

This document is identified by SK810-SU03-P24A.

## Document Revision History

**P24A (2024-02-16)**
Initial version.

## Important Notice

Information in this document is subject to change without notice.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