

TLP System Interlock Safety Shutdown ILK

Advanced TLP/HMM/HBM Solutions

1 Features

- Interlock safety shutdown for TLP-3010C, TLP-4010C, TLP-8010A/C and TLP-12010A/C systems
- Works with external standalone interlock hardware switch (option 1) or interlock control voltage (option 2)
- Compatible with Keithley SMU interlock interface
- **Note: the TLP system does not operate unless the interlock is connected properly**

2 Description

The interlock safety shut down function of the TLP-3010C, 4010C, 8010A and 8010C systems is used to disable the TLP system for safety shutdown.

If the TLP system is disabled by the interlock, the internal high voltage power supply is disconnected and the red pulse LED on the front panel does not flash.

Despite this, the characteristic “click” sound of the operating pulse relay inside the pulse generator can be heard, but no high voltage output pulse will be delivered.

The interlock can be controlled by two methods:

Option 1: Hardware interlock switch.

The switch can be operated in “Normally ON” (Sect. 2.1.1) or “normally OFF” (Sect. 2.1.2) mode.

Option 2: Interlock voltage control or reuse of the Keithley SMU interlock interface

Fig. 1 shows the rear side of the TLP-3010C, 4010C, 8010A and 8010C pulse generators. The interlock signal is connected to the control I/O connector.

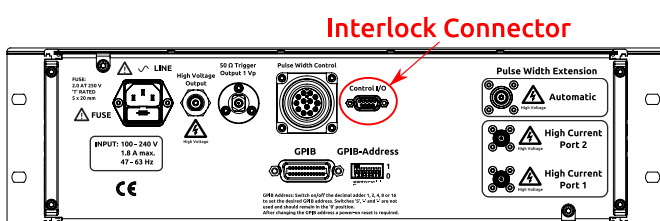


Figure 1: Interlock connector: control I/O

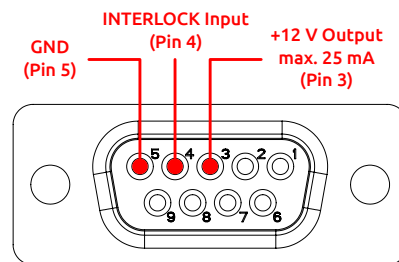


Figure 2: Pin-diagram of the interlock connector: control I/O connector on the rear side of the pulse generator control I/O connector shown in Fig. 1

Fig. 2 shows the pin diagram of the control I/O connector on the rear side of the TLP pulse generator.

2.1 Option 1: Hardware Interlock Switch

2.1.1 Option 1A: “Normally ON”

A hardware switch and cable can be connected to the control I/O connector at the rear side of the TLP-3010C, 4010C, 8010A or TLP-8010C system, as shown in Fig. 3.

Tab. 1 and Fig. 3 shows the interlock function depending on the switch state.

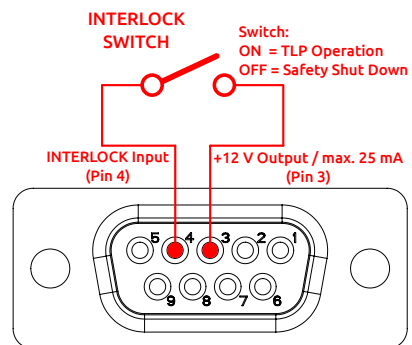


Figure 3: Option 1 – interlock hardware switch (switch requirement: 12 V/25 mA DC)

INTERLOCK SWITCH	Interlock State
ON	Normal operation of the TLP system
OFF	Interlock operation: the TLP system is disabled (locked) and does not deliver pulses

Table 1: Interlock operation with hardware switch on pin 3 and pin 4 of the control I/O connector

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2.1.2 Option 1B: “Normally OFF”

A hardware switch and cable can be connected to the control I/O connector at the rear side of the TLP-3010C, 4010C, 8010A or TLP-8010C system, as shown in Fig. 4.

Tab. 2 and Fig. 4 shows the interlock function depending on the switch state.

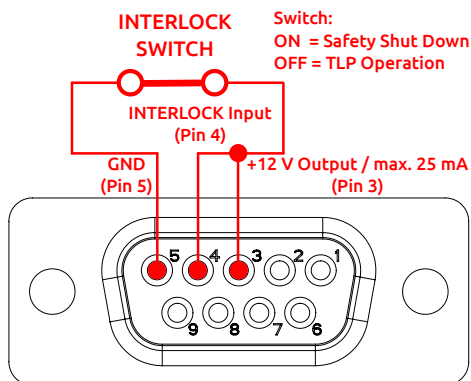


Figure 4: Option 1 – interlock hardware switch (switch requirement: 12 V/25 mA DC)

INTERLOCK SWITCH	Interlock State
ON	Interlock operation: the TLP system is disabled (locked) and does not deliver pulses
OFF	Normal operation of the TLP system

Table 2: Interlock operation with hardware switch on pin 3 and pin 4 of the control I/O connector

2.2 Option 2: Interlock Voltage Control and Reuse of Keithley SMU Interlock Interface

Optionally the interlock function can be realized by voltage control and/or reusing the Keithley SMU interlock function as shown in Fig. 5.

Tab. 3 shows the operating conditions.

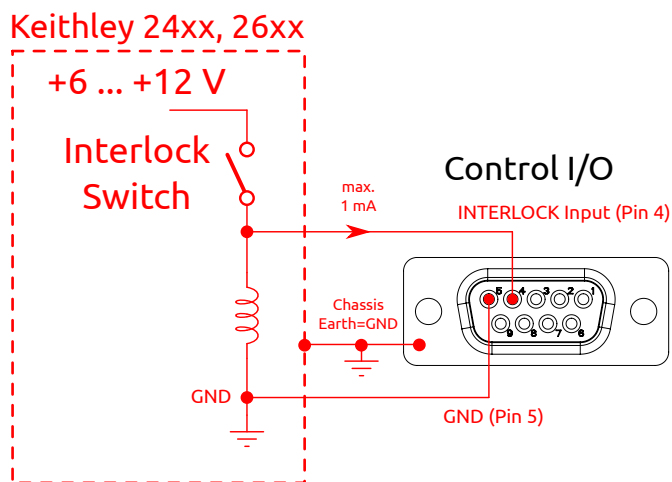


Figure 5: Option 2 – Reuse of the Keithley SMU interlock interface

INTERLOCK Input (Pin 4)	Interlock State
4 V to 15 V	Normal operation of the TLP system
<1 V or open	Interlock operation: the TLP system is disabled (locked) and does not deliver pulses

Table 3: Interlock operation using voltage control: Interlock input voltage (pin 4) versus GND (pin 5)

The input resistance of the interlock input to GND is 13.3 kΩ which results in 0.9 mA at 12 V.

TLP System Interlock Safety Shutdown ILK

Advanced TLP/HMM/HBM Solutions

3 Interlock Interconnection Cable

Fig. 6 shows the interconnection cable which must be connected to the Control I/O connector shown in Fig. 7 and Fig. 8.

The 3-pin 2.54 mm header on the interlock interconnection cable (Fig. 9) must be connected according Option 1 (Sect. 2.1) or Option 2 (Sect. 2.2).



Figure 6: Interlock interconnection cable



Figure 9: Pin diagram of the 3-pin 2.54 mm header on the interlock interconnection cable

4 Ordering Information

Pos.	Description	Part No.
01	TLP System Interlock Safety Shutdown	ILK

General

The product data contained in this data-sheet is exclusively intended for technically trained staff. You and your technical departments will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to such application. Our products are solely intended to be commercially used internally and should not be sold to consumers. This data-sheet is describing the specifications of our products for which a warranty is being granted by HPPI GmbH. Any such warranty is granted exclusively pursuant to the terms and conditions of the respective supply agreement. There will be no guarantee of any kind for the product and its specifications. For further information on technology, specific applications of our product, delivery terms, conditions and prices please contact HPPI:

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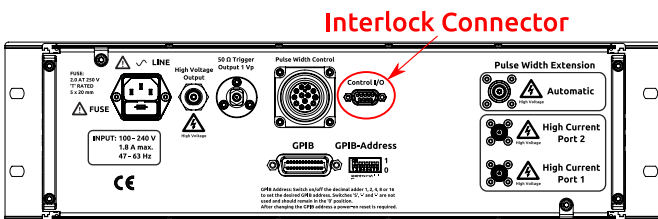


Figure 7: Interlock switch control connector



Figure 8: Interlock interconnection cable connected to the Control I/O port