

Interlock Safety Shutdown ILK

Advanced TLP/HMM/HBM Solutions

1 Features

- Interlock safety shutdown for TLP/CMTI-xxx10y high voltage pulse generators
- Works with external standalone interlock hardware switch (option 1) or interlock control voltage (option 2)
- Compatible with Keithley SMU interlock interface
- **Note: the pulse generator does not operate unless the interlock is connected properly**

2 Description

The interlock safety shut down function of the TLP/CMTI-xxx10y high voltage pulse generators is used to disable the pulse output for safety shutdown.

If the pulse output has been disabled by the interlock circuit, 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/CMTI-xxx10y pulse generators. The interlock signal is connected to the control I/O connector.

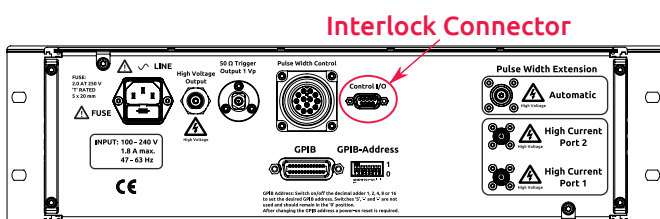


Figure 1: Interlock connector: control I/O

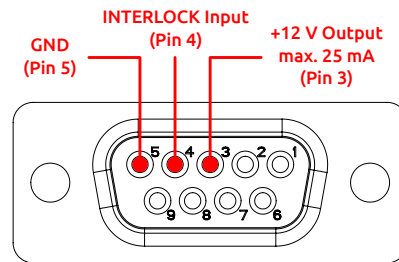


Figure 2: Pin-diagram of the interlock connector: control I/O connector on the rear side of the pulse generator control I/O connector shown in Fig. 1

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/CMTI-xxx10y system, as shown in Fig. 3.

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

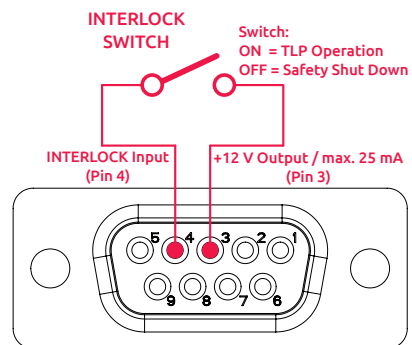


Figure 3: Option 1 – interlock hardware switch (switch requirement: 12 V/25 mA DC)

INTERLOCK SWITCH	Interlock State
ON	Normal operation of the pulse generator
OFF	The pulse generator is disabled (locked) and will not emit any pulses.

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

Interlock Safety Shutdown ILK

Advanced TLP/HMM/HBM Solutions

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/CMTI-xxx10y system, as shown in Fig. 4.

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

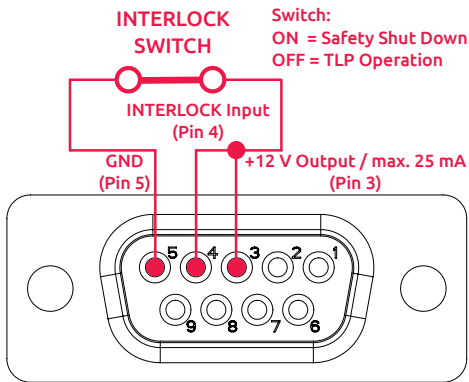


Figure 4: Option 1 – interlock hardware switch (switch requirement: 12 V/25 mA DC)

INTERLOCK SWITCH	Interlock State
ON	The pulse generator is disabled (locked) and will not emit any pulses.
OFF	Normal operation of the pulse generator

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.

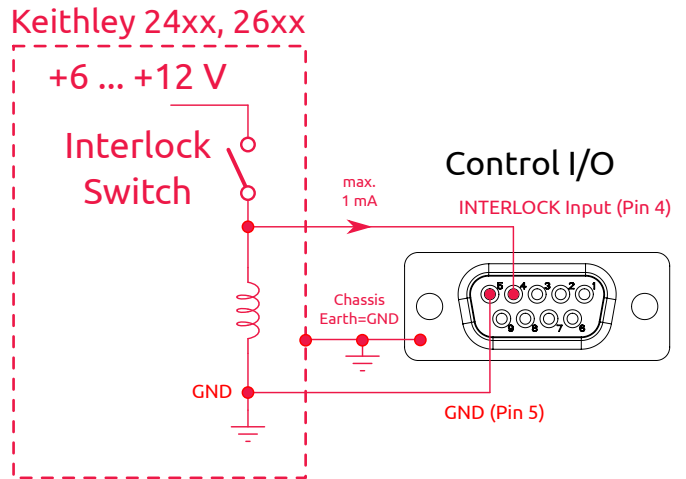


Figure 5: Option 2 – Reuse of the Keithley SMU interlock interface

INTERLOCK Input (Pin 4)	Interlock State
4 V to 15 V	Normal operation of the pulse generator
<1 V or open	The pulse generator is disabled (locked) and will not emit any 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.

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



Figure 6: Interlock interconnection cable

4 Ordering Information

Pos.	Description	Part No.
01	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:

High Power Pulse Instruments GmbH
 Stadlerstrasse 6A
 D-85540 Haar, Germany
 Phone : +49 (0)89 8780698 - 440
 Fax : +49 (0)89 8780698 - 444
 E-Mail : info@hppi.de

Due to technical requirements our products and/or their application may be harmful. For information please read carefully the manual or contact HPPI. Safety notes in the manual will inform you about possible risks that result from any foreseeable application of our products. Changes of this data-sheet are reserved.

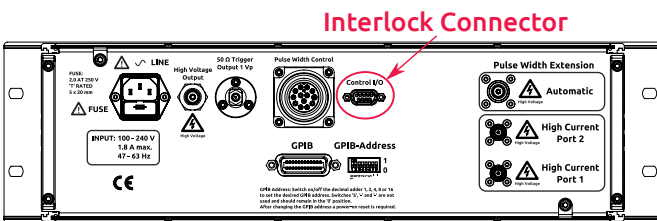


Figure 7: Interlock switch control connector



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