

Application Note #12 PLI Series – the Programmable Load Profile, the Trigger Sys- tem and Its Capabilities

Programmable Load Profile (List Function)

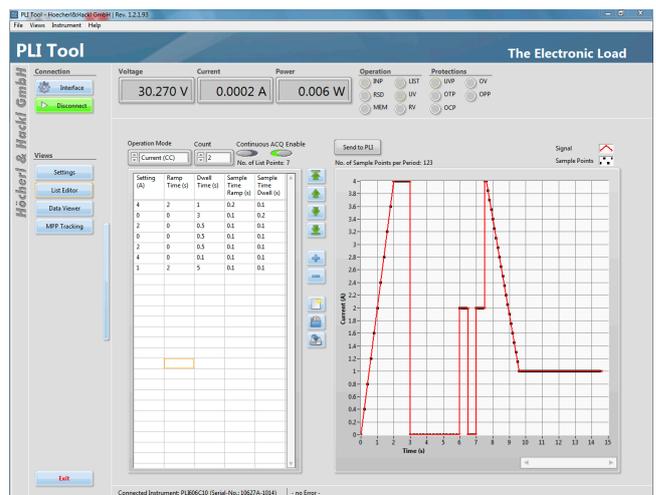
The PLI series electronic loads are able to execute user-defined dynamic load profiles. A single load profile may consist of up to 300 points with adjustable dwell and ramp times. The function can be executed in all function modes (CC, CV, CR and CP). The adjustable setting time for the dwell time ranges from 200 μ s to 800,000 s. The adjustable setting time for the ramp time ranges from 0 μ s to 800,000 s. The time resolution is 200 μ s with an accuracy of ± 0.02 %.

Internal Data Memory

The List function features a dedicated fast synchronous measurement data acquisition. The adjustable sampling rate ranges from 200 μ s to 800,000 s. The following data is recorded on every single measurement point: voltage, current and timestamp. The PLI load can record a maximum of 8,000 measurement points.

The generation of the load profile can be done via one of the digital data interfaces. The PLI control tool supports you to easily create, edit and save the load profiles with a graphical preview display. It is available on our website for free. Further on, it is possible to generate a load profile with a maximum of 20 points from the load's User Interface.

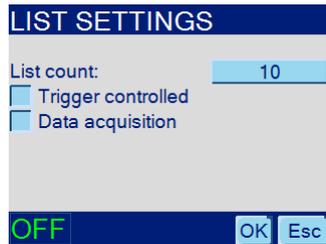
Starting the



CREATE NEW LIST SET	CREATE CURRENT LIST	EDIT CURR. LIST SET
List length: 10	List length: 10	List length: 235
List mode: <input checked="" type="radio"/> Current	Step: 5.3 A	Step: prev. 23 next
<input type="radio"/> Voltage	Level: 5.3 A	Level: 5.3 A
<input type="radio"/> Resist.	Ramp time in s: 5.0003	Ramp time in s: 2.0003
<input type="radio"/> Power	Dwell time in s: 2.0123	Dwell time in s: 2.0123
	Smpl. time ramp in s: 0.100	Smpl. time ramp in s: 0.100
	Smpl. time dwell in s: 1.000	Smpl. time dwell in s: 1.000
OFF	OK Esc	OFF Esc

Starting the Load Profile

The load profile residing in the internal memory of the Electronic Load can be started in different ways. The easiest one is the activation of the load input by pressing the "Input" button. Versatile possibilities are provided by the powerful trigger system of PLI series. So the list function can be started immediately, delayed or repeatedly.



The Trigger System of PLI Series

The trigger system allows you to set or start various functions of the Electronic Load in an event-driven way. The following functions can be controlled by the trigger system:

- Setting of a triggered nominal value
- Start of a fast static data acquisition
- Start of a list function

Trigger state:

- Cont.

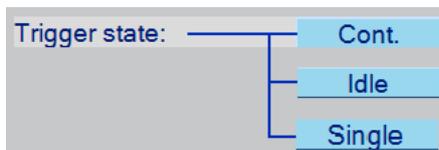
The trigger system is automatically initialized after each trigger event.

- Idle

The trigger system is deactivated.

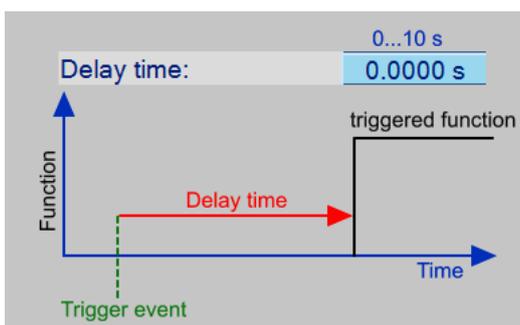
- Single

The trigger system is initialized for one single trigger



Delay time

Delay time between the trigger event and the setting/start of the triggered function. The delay time ranges from 0 to 10 s with 200 µs resolution.

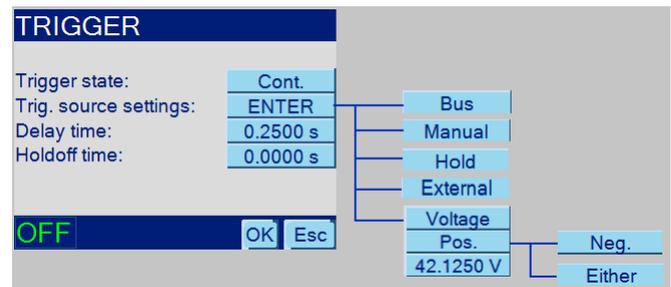


Holdoff time

Duration after a trigger event within all further trigger events are ignored. The holdoff time ranges from 0 to 1 s with 200 µs resolution.

Trig. source settings

There are a lot of different sources for the trigger event generation.



- Bus

The trigger event is generated by the SCPI command *TRG.

- Manual

The trigger event is generated by pressing the "Trigger" button on the front panel.

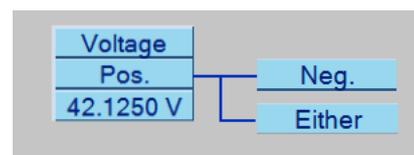
- Hold

No trigger source is selected.

- External

The trigger event is generated by a toggling signal on pin 21 of the I/O port. The edge of the signal can be positive (Pos.), negative (Neg.), or one of these (Either).

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- Voltage

By choosing this trigger source the function is started after exceeding or undershooting a certain voltage threshold.

The direction of the voltage change can be selected with the "Slope" setting.

- Pos.

The trigger voltage must be exceeded.

- Neg.

The trigger voltage must be undershot.

- Either

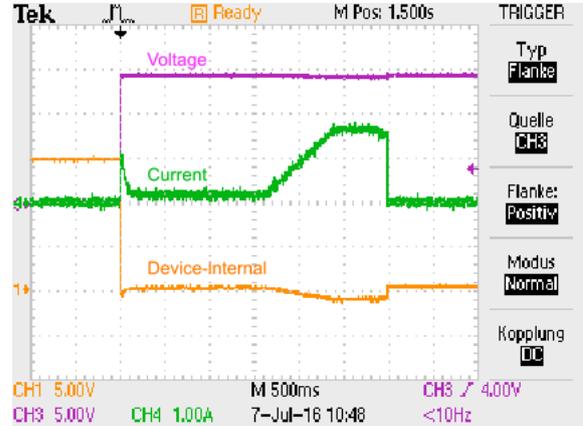
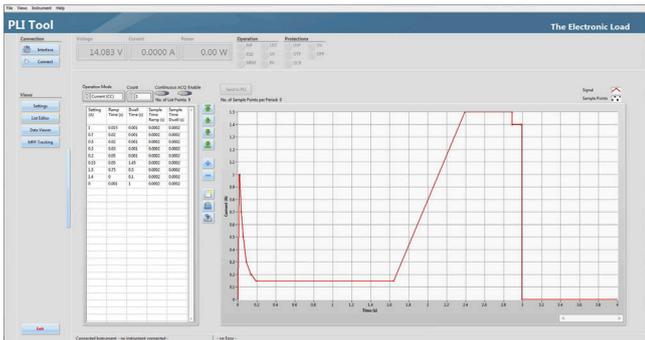
The trigger voltage must be broken through from any direction.

The trigger voltage is measured by a fast A/D converter.

Example: Programmable Load Profile Started by a Trigger Voltage

The control unit for outside rearview mirrors of a vehicle is tested with the aid of an electronic load. Therefore the servomotors are simulated by a load profile which is saved in the electronic load. If the applied voltage exceeds 14 V DC then the control unit test starts. The load profile is generated with the PLI Tool and afterwards transferred to the electronic load.

Voltage and current characteristics during the test



Settings on the electronic load:

- List setting
- Trigger-controlled
- Trigger state
- Single
- Delay time: 0 s
- Holdoff time: 1 s
- Trigger source
- Voltage
- Pos
- 10 V