

Charger Starter Interface for PLI Series

(Option PLI16, up from firmware version 4.2.x)


Intelligent chargers often only start the charging process when they detect a suitable energy storage device at their output.

With the optional Charger Starter Interface, the PLI series electronic load simulates a discharged accumulator by applying an appropriate voltage to the load input.



PLI series electronic load and Selectiva series charger from Fronius

Safety Instructions

 Read the safety instructions and the user manuals for the electronic load and the respective charger before starting to operate the system!

Functional Principle

The Charger Starter Interface (CST) can be installed as an option (PLI16) in any PLI load with 60 V or 120 V voltage range. It works in principle like a programmable power supply.

To simulate a discharged accumulator with the electronic load, set the CST voltage to the voltage expected by the charger when the accumulator is discharged. The activation of the output voltage of the CST can be coupled with the switching of the load input, so that when the load input is switched on, the output voltage of the CST is applied to the load input for a certain time.

As soon as the charger supplies current, a previously programmed voltage list can be started in the load, simulating the battery voltage rising.

The measurement data for current and voltage can be recorded and stored in the electronic load and read after charging.

Test Procedure

Configure CST

In the "Basic settings" menu of the electronic load, select "Charger starter".

Make the following settings in the next dialog "Charger Starter Settings":

- Output voltage: Set the CST output voltage to the value of the empty accumulator.
- Timer state, Delay timer: Set the delay time so that the charger starts properly.
- Coupled mode: Activate CST simultaneously with load input

| Charger Starter Settings | | Local CC Med |
|---|-------|--------------------|
| <input checked="" type="checkbox"/> Coupled mode | | Input Off |
| <input type="checkbox"/> Output state | | |
| <input checked="" type="checkbox"/> Timer state | | Input Off |
| Delay timer [s]: | 60.0 | |
| Output voltage [V]: | 19.50 | |
| <input type="button" value="←"/> <input type="button" value="OK"/> <input type="button" value="ESC"/> | | |

Configure Voltage Mode

In the "Basic Settings" menu, select "Mode" and then "CV". Make the following settings in the "CV Mode" dialog:

- Setting: Set the voltage setting slightly above the CST voltage.
- Triggered setting: Set triggered setting to maximum value

| CV Mode | | Local CC Med |
|---|----------|--------------------|
| Setting: | 20.000 V | Input Off |
| <input checked="" type="checkbox"/> Triggered setting: | 60.000 V | |
| <input type="button" value="←"/> <input type="button" value="OK"/> <input type="button" value="ESC"/> | | |

Define Charging Curve With Voltage List

Select "List" in the "Function" menu and generate a voltage list according to the respective charge curve.

- List mode: Select Voltage
- Data acquisition: Activate data acquisition

| New List Mode and Length | | Local CC Med |
|---|---------|--------------------|
| List length: | 040 | Input Off |
| List mode: | Voltage | |
| <input checked="" type="checkbox"/> Data acquisition | | Input Off |
| <input type="button" value="←"/> <input type="button" value="OK"/> <input type="button" value="ESC"/> | | |

Set the first list value identical to the static setting (in our example 20 V). Define all further list steps.

| New List | | Local CC Med |
|---|----------|--------------------|
| List length: | 40 | Input Off |
| Step: | 01 | |
| Level in [V]: | 20.00 | Input Off |
| Ramp time in [s]: | 0.0000 | |
| Dwell time in [s]: | 120.0000 | Input Off |
| Smpl. time ramp [s]: | 1.0000 | |
| Smpl. time dwell [s]: | 1.0000 | |
| <input type="button" value="←"/> <input type="button" value="OK"/> <input type="button" value="ESC"/> | | |

Start list function by trigger.

| List settings | | Local CC Med |
|---|---|--------------------|
| <input type="checkbox"/> Continuous list execution | | Input Off |
| Iteration count: | 1 | |
| <input checked="" type="checkbox"/> Trigger controlled | | Input Off |
| <input checked="" type="checkbox"/> Data acquisition | | |
| <input type="button" value="←"/> <input type="button" value="OK"/> <input type="button" value="ESC"/> | | |

Configure Trigger

As soon as the charger supplies current, a trigger is to be initiated that starts the preconfigured voltage list.

Select the "Trigger" entry in the "Settings" menu and make the following settings in the "Trigger" dialog:

- Trigger state: Single
- Trigger source: Current
- Slope: Positive
- Level: Enter current at which it is clearly recognized that the charger has started.

| | | | |
|-----------------------|----------|--------------------|-----|
| Trigger | | Local CC Med | |
| Trigger state: | Single | | |
| Delay time in [s]: | 0.0000 | | |
| Hold off time in [s]: | 0.0000 | | |
| Trigger source: | Current | Input Off | |
| Slope: | Positive | | |
| Level: | 2.0000 A | | |
| Func: LIST | | OK | ESC |

Start Test

Connect the charger to the load input and switch the load input on.

Read Measurement Data

After the test, the data recorded during list execution can be transferred to a USB flash drive attached to the USB host socket on the front panel.

Select "Export" from the "Data" menu.

- DUT directory: specify directory on USB memory and start data transfer

| | | | |
|---------------------------|--------------------------------------|--------------------|-----|
| Export Data to USB | | Local CC Med | |
| No. of data points: | 5035 | ACQ | |
| DUT directory: | 01 | | |
| Export to USB flash drv. | <input type="button" value="start"/> | | |
| | | Input Off | |
| Func: LIST | | | ESC |

Programming via Data Interface

In addition to local operation, all the functions described can also be programmed via one of the data interfaces.

SCPI Command Sequence:

```
CST:VOLT 19.5
CST:OUTP:TIM:DEL 60
CST:OUTP:TIM ON
CST:OUTP:COUP ON
FUNC:MODE VOLT
VOLT 20
VOLT:TRIG MAX
LIST:MODE VOLT
LIST:VOLT 20,20.2,20.4,20.6,20.8,...
LIST:RTIM 0,30,30,120,120,...
LIST:DWEL 120,0,0,0,0,...
LIST:STIM:RTIM 1,1,1,1,1,...
LIST:STIM:DWEL 1,1,1,1,1,...
LIST:COUN 1
LIST:ACQ ON
LIST:TRIG ON
TRIG:SOUR CURR
TRIG:LEV:CURR 2
TRIG:SLOP POS
INIT
INP ON
...
DATA:POIN?
DATA:REM? 100
DATA:REM? 100
...
```