Höcherl & Hackl
The electronic load

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 (CSI) 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 CSI voltage to the voltage expected by the charger when the accumulator is discharged. The activation of the output voltage of the CSI can be coupled with the switching of the load input, so that when the load input is switched on, the output voltage of the CSI 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.

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Test Procedure

Configure CSI
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 CSI 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 CSI simultaneously with load input

Charger Starter Settings — Local CC Med
☑ Coupled mode
☐ Output state
☑ Timer state
Delay timer [s]: 60.0
Output voltage [V]: 19.50
Input Off
OK   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 CSI voltage.
- Triggered setting: Set triggered setting to maximum value

CV Mode — Local CC Med
Setting: 20.000 V
☑ Triggered setting:
60.000 V
Input Off
OK   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
List mode: Voltage ▼
☑ Data acquisition
Input Off
Func: LIST   OK   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
Step: ◄ 01 ►
Level in [V]: 20.00
Ramp time in [s]: 0.0000
Dwell time in [s]: 120.0000
Smpl. time ramp [s]: 1.0000
Smpl. time dwell [s]: 1.0000
Input Off
OK   ESC

Start list function by trigger.

List settings — Local CC Med
☐ Continuous list execution
Iteration count: 1
☑ Trigger controlled
☑ Data acquisition
Input Off
Func: LIST   OK   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.

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

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
...
```

More applications at
www.hoecherl-hackl.com