

## Electronic Multi-Channel Load PMLI



**150 W up to 1,800 W**  
**40 V up to 240 V**  
**4,5 A up to 120 A**

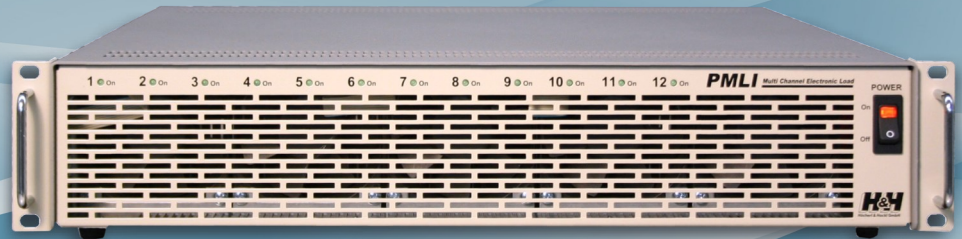
# Multi-Channel Loads, PMLI Series

## SCPI

### Interface overview

RS-232	X
USB	/
GPIB	X
LAN	O
System bus	X
Analog	X
Analog isolated	/

X Standard O Option / not available



- Configurable multi-channel load
- Up to 12 channels in 19" - 2HU
- Tailored configurations possible with modules in 4 voltage- and 4 power classes
- 150 W - 300 W - 450 W - 600 W modules
- Voltages 40 V - 60 V - 120 V - 240 V
- Currents from 4.5 A to 120 A
- Current, voltage, resistance, power mode
- Dynamic loads
- 1,800 W total power
- SCPI programming with measurement function
- Electronic protection
- Analog measurement outputs for voltage and current
- Analog control input

**Configuration**

The PMLA electronic multi-channel load has up to 3 cooling units, each with 4 assembly positions for load modules.

150 W, 300 W, 450 W or 600 W load modules are available.

Depending on power, a module occupies one (150 W), two (300 W), three (450 W) or four assembly positions (600 W).

**Load Modules**

The modules are available in three different voltages 40 V, 60 V, 120 V and 240 V and for currents of 4.5 A to 120 A.

Various loads can be configured, e.g.:

1 x 600 W + 1 x 450 W + 2 x 300 W + 5 x 150 W

The total power is max. 1,800 W. The loads can therefore be easily configured to test units with multiple outputs.

The load inputs are galvanically

separated.

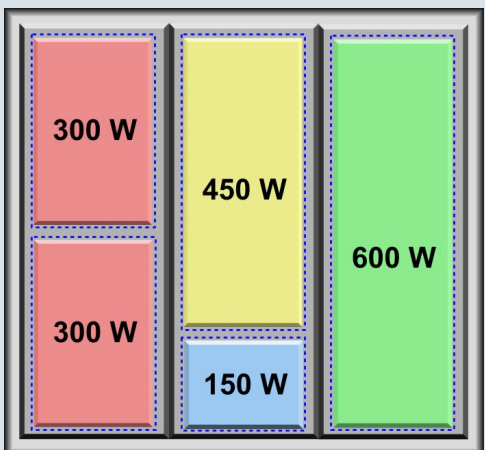
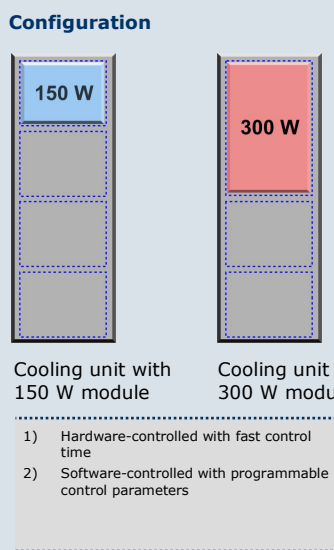
Very simple systems can therefore be specially configured to requirements with multi-channel Burn-In equipment.

**Operating Modes and Functions**

The following operating modes are possible:

- Current mode <sup>1)</sup>
- Voltage mode <sup>2)</sup>
- Resistance mode <sup>2)</sup>
- Power mode <sup>2)</sup>
- Dynamic mode with 2 presets

An adjustable voltage protection enables current to flow when exceeded. Voltage and current measurement functions are available.



Example: PMLI with 5 channels  
A module cannot be split over several cooling units.

This is H&H

PLA Low Power

PLI High Power

ZS Multi-Range

ERI Energy Recycling

PMLA Multi-Channel, GUI

PMLI Multi-Channel

ZSAC AC & DC

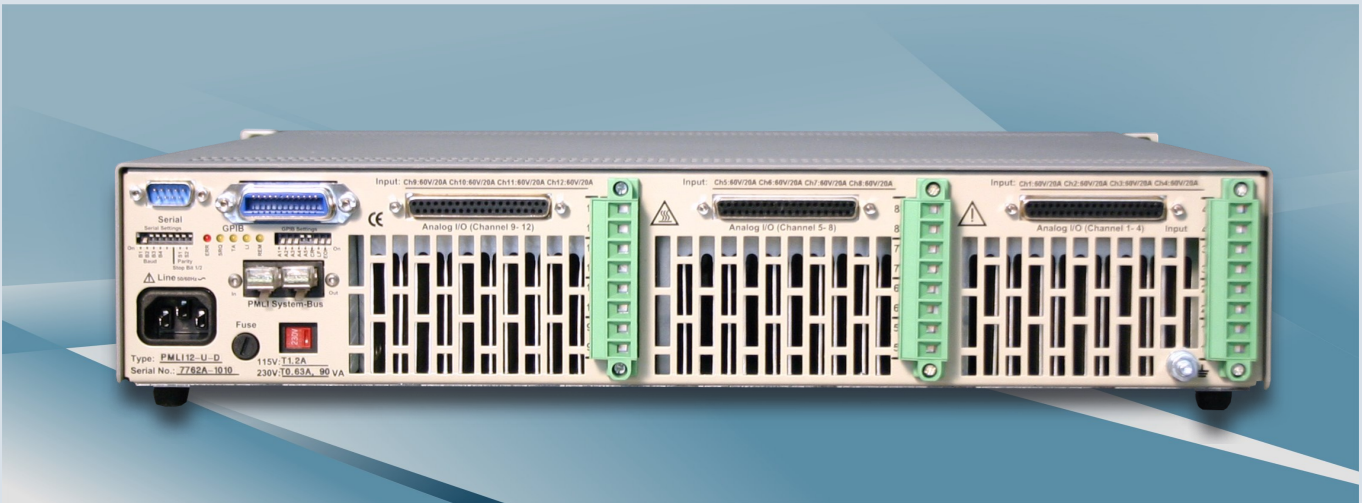
NL Source-Sink

Accessories

SE Power Distribution

GTC

PMLI Series



Available Load Modules

	150 W	300 W	450 W	600 W
40 V	M15-04 40 V, 30 A	M30-04 40 V, 60 A	M45-04 40 V, 90 A	M60-04 40 V, 120 A
60 V	M15-06 60 V, 20 A	M30-06 60 V, 40 A	M45-06 60 V, 60 A	M60-06 60 V, 80 A
120 V	M15-12 120 V, 10 A	M30-12 120 V, 20 A	M45-12 120 V, 30 A	M60-12 120 V, 40 A
240 V	M15-24 240 V, 4.5 A	M30-24 240 V, 9 A	M45-24 240 V, 13.5 A	M60-24 240 V, 18 A

Load Modules

Load modules are available in four voltage categories and four power classes.

Load Terminals

The load inputs are connected to pluggable terminal blocks. All load inputs are galvanically isolated.

Analog Measurement Outputs, Analog Control Input

For each load module, analog measurement outputs 0 ... 10 V for voltage and load current are

available in real time.

Via an analog control input the load current can be additionally set by 0 ... 10 V, also in real time.

Cooling

The air supply from the front panel to the back panel enables the assembly of compact rack systems with no gaps. The temperature-controlled fan control provides a pleasant operating noise.

PMLI system bus  
Master ↔ Slaves



Programming

Programming is done in SCPI syntax. All channels can be addressed individually, jointly or in groups.

Current LabVIEW® drivers and tools can be downloaded from our website.

www.hoecherl-hackl.com

Calibration  
(FCC-PMLIxx)



We supply a free Factory Calibration Certificate (FCC) with the devices. The FCC meets the requirements according to DIN EN ISO 9000ff. This calibration certificate documents the traceability to national standards to illustrate the physical device in accordance with the International System of Units (SI).

Within 2 years after delivery, we calibrate your device another time free of charge!

Calibration Service **HH**  
Höcherl & Hackl GmbH  
ISO 9000  
CAL DATE:  
09/2017

Devices and Interfaces

are available in the following versions:

**PMLI-M** Master device with GPIB + RS-232 interface and PMLI system bus for connection of up to 8 slave devices.

**PMLI-S** Slave device with PMLI system bus for operation on a master device and with an output for a further slave device.

**Cooling unit** Empty cooler module (without load modules) with 4 free assembly positions. (1x, 2x or 3x required per device depending on channels).

**PMLI05** Option external LAN/RS-232 adapter



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## Module Overview PMLI Series

Module Order number	M15-04	M15-06	M15-12	M15-24	M30-04	M30-06	M30-12	M30-24
<b>Power</b>	150 W	150 W	150 W	150 W	300 W	300 W	300 W	300 W
<b>Maximum input voltage</b>	40 V	60 V	120 V	240 V	40 V	60 V	120 V	240 V
<b>Current</b>	30 A	20 A	10 A	4.5 A	60 A	40 A	20 A	9 A
<b>Assembly positions</b>	1	1	1	1	2	2	2	2

Module Order number	M45-04	M45-06	M45-12	M45-24	M60-04	M60-06	M60-12	M60-24
<b>Power</b>	450 W	450 W	450 W	450 W	600 W	600 W	600 W	600 W
<b>Maximum input voltage</b>	40 V	60 V	120 V	240 V	40 V	60 V	120 V	240 V
<b>Current</b>	90 A	60 A	30 A	13.5 A	120 A	80 A	40 A	18 A
<b>Assembly positions</b>	3	3	3	3	4	4	4	4

## PMLI Software Tools

### TAT Test Automation Tool

The PMLI Test Automation Tool simulates the timed process control of several individual devices.

Typical use is to simulate all consumers in a vehicle.

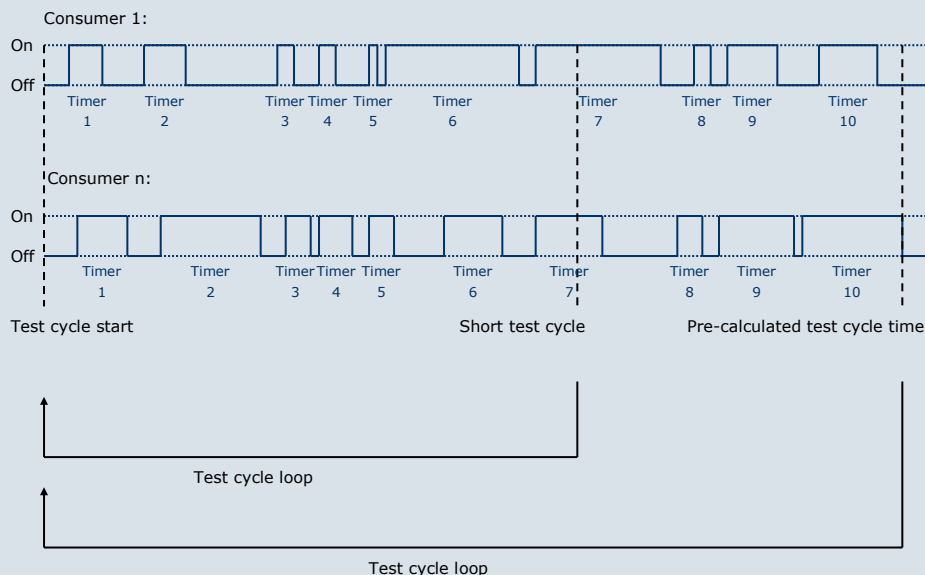
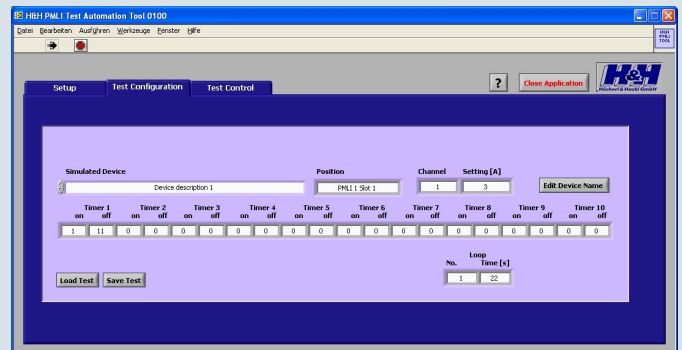
Each channel of the PMLI is assigned a device with its typical current consumption (wind-screen wiper, window winder etc.).

There are 10 programmable timers for each channel. Test routines can be carried out individually or in loops.

### PMLI Control Tool

The PMLI Control Tool lets you control up to 120 channels in 40 PMLI devices.

The tool enables individual channel setting, voltage and current display and measured data recording.



# Technical Data PMLI Series

Accuracy of setting		
	of the setting value	of the corresponding range
<b>Current</b>	±0.25 %	±0.15 %
<b>Voltage, Resistance, Power</b>	SW control with adjustable control parameters Accuracy depends on accuracy of the measurement function for voltage and current and the accuracy of the current setting	
<b>Undervoltage protection</b>	±1 %	±0.15 %
<b>Resolution of settings</b>	12 bits	
Accuracy of measurement		
	of the measured value (real value)	of the corresponding range
<b>Voltage</b>	±0.2 %	±0.1 %
<b>Current</b>	±0.25 %	±0.1 %
<b>Resolution of measurements</b>	12 bits	
<b>Sampling rate</b>	300 ms	
Dynamics		
<b>2 programmable currents and times</b>		
<b>Setting range</b>	10 ms ... 60 s	
<b>Accuracy of time setting</b>	±2 ms	
Accuracy of analog control 0 ... 10V		
	of the setting value	of the corresponding range
<b>Current</b>	±0.25 %	±0.15 %
Input resistance >20 kΩ GND max. 2 V <sup>1)</sup> with respect to negative load input		
Accuracy of analog measurement outputs 0 ... 10 V		
	of analog signal of real value	offset voltage
<b>Voltage</b>	±0.5 %	±30 mV
<b>Current</b>	±0.5 %	±30 mV
GND max. 2 V <sup>1)</sup> with respect to negative load input Minimum load capacity 2kΩ		
Input		
<b>Input resistance</b>	>50 kΩ when load input is off	
<b>Input capacity</b>	approx. 1 μF/150 W	
<b>Parallel operation</b>	up to 3 channels can be connected in parallel	
<b>Input voltage</b>	see load modules overview	
<b>Current rise and fall time<sup>2)</sup></b>	300 μs (10 ... 90 % Inom)	
<b>Maximum input voltage Vmax</b>	see load modules overview	
<b>Minimum input voltage Vmin</b>	Vmin 1.4 V at maximum current, including linear derating of the current	

The specified accuracies refer to an ambient temperature of 23 ±5 °C. The specified accuracies are valid when the unit is connected to undisturbed voltages (ripple and noise < 0.1 %). At voltages with higher disturbance values the accuracy can change for the worse.

1) pos. or neg. DC voltage or RMS value of sinusoidal AC voltage  
2) Rise and fall times are defined as 10 ... 90 % and 90 ... 10 % of the maximum current (current mode FAST, tolerance ±20 %).

<b>Permissible potentials</b>	negative load input to case: max. 100 V <sup>1)</sup> neg. load input to neg. load input: max. 100 V <sup>1)</sup>
<b>Load connections</b>	Phoenix Contact PH8/7.62-ST43
<b>Sense connections</b>	at the Analog I/O Port
<b>Continuous power</b>	up to T <sub>A</sub> = 21 °C
<b>Derating</b>	-1.2 %/°C for T <sub>A</sub> > 21 °C
Protection and monitoring	
<b>Protective devices</b>	overcurrent overpower overtemperature
<b>Monitoring signals</b>	overvoltage undervoltage (if the input voltage is too low for the set current)
Operating conditions	
<b>Operating temperature</b>	5 ... 40 °C
<b>Stock temperature</b>	-25 ... 65 °C
<b>Max. operating height</b>	2,000 m above sea level
<b>Pollution degree</b>	1
<b>Overvoltage category of mains</b>	II
<b>Max. humidity</b>	80 % at 31 °C, linear derating to 50 % at 40 °C
<b>Min. distance rear panel - wall or other objects</b>	70 cm
<b>Cooling</b>	2-stage air-cooling, temperature-controlled air inlet via the front panel air outlet via the rear panel for gap-free 19" rack installation
<b>Noise</b>	69 dB(A) (measured in a distance of 1 m)
<b>Supply voltage</b>	115/230 V ~ ±10 %, 50 ... 60 Hz switchable
<b>Power consumption</b>	max. 90 VA
Housing	
<b>Dimensions</b>	19" - 2 HU, 500 x 88 x 390 mm (without handles and mounting bracket)
<b>Weight</b>	max. 18.3 kg, depending on equipment
<b>Color:</b> Front panel Side panels, top	RAL7032 (pebble grey) RAL7037 (dusty grey)
Safety and EMC	
<b>Protection</b>	IP20
<b>Measuring category</b>	O (CAT I according to EN 61010 Rev. 2004)
<b>Electrical safety</b>	DIN EN 61010-1 DIN EN 61010-2-030
<b>EMC</b>	DIN EN 61326-1 DIN EN 55011 DIN EN 61000-3-2 DIN EN 61000-3-3
Calibration, scope of supply, warranty	
<b>FCC-PMLI</b>	Factory Calibration Certificate, twice for free
<b>Scope of supply</b>	incl. 19" mounting bracket, RS-232 cable
<b>Warranty</b>	2 years

Order numbers	
<b>PMLI-M</b>	PMLI Master device with GPIB + RS-232 + PMLI system bus interface
<b>PMLI-S</b>	PMLI Slave device with system bus interface for connection to Master device and for connection to other Slave devices
<b>Cooling Unit</b>	Cooler module, empty with 4 slots (depending on use, 1x, 2x or 3x required per PMLI device)
<b>Mxx-xx</b>	Load module (see type overview, top). Unless otherwise indicated the modules are mounted in the device in the sequence specified in the order.
<b>PMLI05</b>	Optional external LAN/RS-232 adapter

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PMLI excerpt from Catalog\_E\_0303

**The Electronic Load**