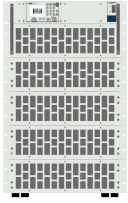


Datasheet Series PLI

Model	PLI21080MR4	
Order no.	17-161-000-02	
Basic operating modes	CC, CV, CR, CP	
Standard interfaces	RS-232, USB, LAN, CAN	
Max. input voltage V_{max}	800 V	
Min. input voltage V_{min} ¹⁾	1 V	
Max. load current I_{max}	224 A	
Continuous power	21000 W	
Short-time power ²⁾	21000 W	
Voltage setting	0 ... 800 V	
Current ranges	0 ... 56 A 0 ... 112 A 0 ... 168 A 0 ... 224 A	
Resistance ranges	0.0358 ... 153.62 Ω (max. 56 A) 0.0179 ... 76.81 Ω (max. 112 A) 0.012 ... 51.206 Ω (max. 168 A) 0.0089 ... 38.234 Ω (max. 224 A)	
Power ranges continuous/short-time ³⁾	0 ... 5250 W/5250 W 0 ... 10500 W/10500 W 0 ... 15750 W/15750 W 0 ... 21000 W/21000 W	
Rise and fall time fast / medium / slow ⁴⁾	35 μs	
Input capacity		
Load terminals (front) ⁵⁾	-	
Load terminals (rear) ⁶⁾	FKS25/10-SM10	
Mains voltage ⁷⁾	1/N/PE AC 230 V 50 ... 60 Hz	
Mains voltage toggleable ⁸⁾	1/N/PE AC 115 V 50 ... 60 Hz	
Power consumption	900 VA	
Noise max. ca. ⁹⁾	78 dB(A)	
Weight ca.	136 kg	
Housing / 3D model ¹⁰⁾	19" - 17 / PLI_M36	
Width x Height x Depth	483 x 774 x 631 mm	

1. Minimum input voltage for maximum static load current.

2. Level and duration of the peak power depend on the previous power.

Datasheet Series PLI

3. The setting range extends max. to the possible peak power.
4. Rise and fall times are defined of 10 % ... 90 % and 90 % ... 10 % of the maximum current (CC mode, fast regulation speed, tolerance ± 20 %). Rise and fall time at setting "medium": ca. 150 μ s, "slow": ca. 2 ms.
5. BPK4-30L: Touch-protected binding posts for 4 mm laboratory jacks and stripped wires with diameter up to 4 mm, max. 30 A
BPK4-60L: Touch-protected binding posts for 4 mm laboratory jacks and stripped wires with diameter up to 6 mm, max. 60 A
FKS20/5-SM8: Flat copper bars 20 x 5 mm vertical with hole for screw M8
FKS25/8-SM10: Flat copper bars 25 x 8 mm vertical with hole for screw M10
FKS25/10-SM10: Flat copper bars 25 x 10 mm vertical with hole for screw M10
FKS40/12-SM12: Flat copper bars 40 x 12 mm vertical with hole for screw M12
Models with copper bars (FKS) are delivered with safety covers.
6. BPK4-30L: Touch-protected binding posts for 4 mm laboratory jacks and stripped wires with diameter up to 4 mm, max. 30 A
BPK4-60L: Touch-protected binding posts for 4 mm laboratory jacks and stripped wires with diameter up to 6 mm, max. 60 A
FKS20/5-SM8: Flat copper bars 20 x 5 mm vertical with hole for screw M8
FKS25/8-SM10: Flat copper bars 25 x 8 mm vertical with hole for screw M10
FKS25/10-SM10: Flat copper bars 25 x 10 mm vertical with hole for screw M10
FKS40/12-SM12: Flat copper bars 40 x 12 mm vertical with hole for screw M12
Models with copper bars (FKS) are delivered with safety covers.
7. Mains voltage tolerance: ± 10 %
8. Mains voltage tolerance: ± 10 %
9. Measured on the front from distance of 1 m.
10. Largest width and depth without wiring. 1 U = 44.45 mm.

Operating modes				
Basic operating modes	CC, CV, CR, CP			
Combined operating modes	CC+CV, CR+CC+CV, CP+CC+CV, CV+CC			
Accuracy of setting				
	of setting		of corresponding range	
Voltage	±0.2 %		±0.05 %	
Current	±0.2 %		PLI MR in R1 ±0.1 %, others ±0.05 %	
Resistance (at 5 % to 100 % of voltage range)	±1.4 %		±0.3 % of current range	
Power (at V and I > 30 % of range) (at V and I > 5 % and < 30 % of range)	PLI EC	others	PLI EC	others
	±1 %	±0.35 %	±0.3 %	±0.1 %
	±2 %	±0.7 %	±0.75 %	±0.25 %
Resolution	14 bits			
Accuracy of adjustable protections				
	of setting		of corresponding range	
Overcurrent protection	±1.4 %		±0.3 %	
Undervoltage protection	±1.4 %		±0.3 %	
Resolution	12 bits			
Accuracy of measurement slow				
	of measured value (real value)		of corresponding range	
Voltage	±0.01 %		±0.005 %	
Current	±0.2 %		PLI MR in R1 ±0.1 %, others ±0.05 %	
Resistance	is calculated from current and voltage			
Power	is calculated from current and voltage			
Resolution	23 bits			
Sampling time	250 ms, not triggerable			
Accuracy of display				
Number of decimal places	5 + prefix conversion			
Accuracy	Accuracy of measurement slow ±1 digit of the display value			
Accuracy of measurement fast				
	of measured value (real value)		of corresponding range	
Voltage	±0.1 %		±0.05 %	
Current	±0.2 %		PLI MR in R1 ±0.2 %, others ±0.1 %	
Resistance	calculated from voltage and current values			
Power	calculated from voltage and current values			
Resolution	16 Bit			
Sampling time	200 μs ... 1000 s			
Accuracy of trigger voltage and current				
Voltage	±1 % of range			
Current	±1 % of range			
Dynamic function (LIST)				
No. of load levels	max. 300, with ramp and dwell time setting			
	min.	max.		
Dwell time	200 μs	1000 s		
Ramp time	0 s	1000 s		
Resolution	200 μs			
Accuracy of the setting times	±0.02 %			
Delay at triggered start	max. 300 μs			

Data acquisition		
to external USB flash drive		
Sampling time	0.5 to 30 s, resolution 0.1 s	
Measurement data	timestamp, voltage, current	
No. of measurement points	limited by USB memory capacity	
File format	.csv	
to internal memory		
Sampling time	200 μs ... 1000 s, resolution 200 μs, synchronized with dynamic function	
Measurement data	timestamp, voltage, current	
No. of measurement points	max. 40,000	
Settings memories		
No. of user settings	9, selectable (incl. programmed list) 1 for last device settings at power-off or power fail	
I/O port: accuracy of analog control 0 ... 10 V		
	of setting	of corresponding range
Voltage	±0.2 %	±0.1 %
Current	±0.2 %	PLI MR in R1 ±0.2 %, others ±0.1 %
Overcurrent protection	±1 %	±0.4 %
Undervoltage protection	±1 %	±0.4 %
	Input resistance of analog inputs >10 kΩ	
I/O port: accuracy of analog monitor outputs 0 ... 10 V		
	of analog signal of real value	offset voltage
Voltage	±0.2 %	±15 mV
Current	±0.2 %	±15 mV
	load capacity minimal 2 kΩ	
I/O port: permissible voltages		
	standard I/O port	isolated I/O port (option PLI06)
Vin-io (GND - neg. load input)	PLIxxxxZV: must be galvanically isolated all others: max. 2 V ¹⁾	PLIxxxxZV: max. 2 V ¹⁾ all others: max. 800 V ¹⁾
VioPE (GND - PE)	max. 125 V ¹⁾	max. 125 V ¹⁾
I/O port: control outputs and inputs		
Outputs	activation state load input (low active) status overload (OV, OCP, OPP, OTP, low active) trigger output (low active) programmable logic output (by SCPI command)	
Output level	selectable, 3.3 V, 5 V, 12 V or externally programmable up to 30 V	
Control inputs	activation state load input (low active) operating mode selection trigger input (high active) readable logic input (by SCPI command) control input (activates the analog signals, low active) remote shut-down (low active)	
input level	3 ... 30 V	

The specified accuracies refer to an ambient temperature of 23 ±5 °C. The specified accuracies are valid when the sense lines are connected and 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. positive/negative DC voltage or RMS value of a sinusoidal AC voltage

Technical Data

Input		
Input resistance	> 50 kΩ when load input is off diode function at reverse polarity up to nominal current, except ZV models	
Input capacity	see model overview	
Parallel operation	up to 5 devices in Master-Slave operation	
Max. input voltage	see model overview	
Min. input voltage	see model overview	
Input: permissible voltages		
	standard I/O port	isolated I/O port (option PLI06)
Vin-PE (neg. load input - PE)	max. 125 V ¹⁾	PLIxxxxZV: max. 125 V ¹⁾ all others: max. 800 V ¹⁾
Vin+PE (pos. load input - PE)	Vmax + max. 125 V ¹⁾	PLIxxxxZV: Vmax + max. 125 V ¹⁾ all others: Vmax + max. 800 V ¹⁾
Power		
Continuous power	see model overview (at Ta = 21 °C)	
Derating	-1.2 %/°C for Ta > 21 °C	
Overload capability (short-time power)	see model overview The max. possible overload Po depends on the temperature of the device and therefore on the previously consumed continuous power Pd. The possible overload duration depends on the value of the overload Px.	
Protection and monitoring		
Protective devices	overcurrent overpower overtemperature	
Monitoring	overvoltage indication reverse polarity indication undervoltage indication (if the input voltage is too low for the set current)	
Terminals		
Load input	see model overview	
Sense	PH2/7.62-BU16, see starting at page 135	
Operating conditions		
Operating temperature	5 ... 40 °C	
Stock temperature	-25 ... 65 °C	
Max. operating height	2,000 m above sea level	
Pollution degree	2	
Overvoltage category of mains	II	
Max. humidity	80 % at 31 °C, linear decreasing to 50 % at 40 °C	
Min. distance rear panel to wall or other objects	70 cm	
Cooling	3-stage air cooling, up from 3200 W variably controlled	
Noise weight	see model overview	
Mains voltage	see model overview	
Mains cable	length max. 3 m cross-section of mains leads min. 1 mm ²	
Power consumption	see model overview	

Housing	
Color	
Front	RAL7035 (light grey)
Rear	stainless steel
Top, side panels	RAL7037 (dusty grey)
Safety and EMC	
Protection class	1
Measuring category	0 (CAT I according to EN61010:2004)
Electrical safety	DIN EN 61010-1 DIN EN 61010-2-030
EMC	DIN EN 61326-1 DIN EN 55011 DIN EN 61000-3-2 DIN EN 61000-3-3
Standard interfaces	
Data interfaces	RS-232, USB, LAN, CAN
I/O port	standard I/O port (not isolated)
Available options	
Data interfaces PLI02	GPIO
Mechanical options PLI10 PLI11 PLI12 PLI13 PLI14	19" installation kit for 1 device with ½ 19"; 2 U 19" installation kit for 2 devices with ½ 19"; 2 U 19" installation kit for 1 device with 19"; 2 U 19" installation kit for 1 device with 19"; 3 U heavy-load castors (5 U and upwards)
Function enhancement PLI21	MPPT function with activation code see accuracy of measurement fast
Hardware extensions PLI06	galvanically isolated I/O port
PLI16-06 PLI16-12	Charger Starter Interface (CST) for 60 V models (6...60 V) Charger Starter Interface (CST) for 120V models (6...120V)
Accuracy Load current Activation Activation time	±1 % ±200 mV max. 0.1 A can be coupled with activation state of load input 0.1 ... 100 s ±0.3 s
PLI17	switch box for external load activation via I/O port
DC mains supply PLI18 PLI19	12 V DC mains supply (only for PLI14xx) 12 V DC mains supply (only for PLI32xx with housing extension to 5 U, toggling by mains selection switch)
Calibration, warranty	
FCC-PLIxx	Factory Calibration Certificate, twice for free
Warranty	2 years

1. positive/negative DC voltage or RMS value of a sinusoidal AC voltage

Technical data of production series B, rev. 6. Subject to technical changes without notice.