


# Datasheet Series PLA

|   |                         |  |
|---|-------------------------|--|
| <b>Model</b>  | <b>PLA230</b>           |  |
| <b>Order no.</b>  | <b>22-003-000-01</b>    |  |
| <b>Basic operating modes</b>                            | CC, CV, CR, CP          |  |
| <b>Standard interfaces</b>                              | -                       |  |
| <b>Max. input voltage V<sub>max</sub></b>               | 300 V                   |  |
| <b>Min. input voltage V<sub>min</sub></b> <sup>1)</sup> | 1.2 V                   |  |
| <b>Max. load current I<sub>max</sub></b>                | 6 A                     |  |
| <b>Continuous power</b>                                 | 200 W                   |  |
| <b>Short-time power</b> <sup>2)</sup>                   | 200 W                   |  |
| <b>Voltage setting</b>                                  | 0 ... 300 V             |  |
| <b>Current setting</b>                                  | 0 ... 6 A               |  |
| <b>Resistance setting</b>                               | 0.333 Ohm ... 666.7 Ohm |  |
| <b>Power setting</b> <sup>3)</sup>                      | 0 ... 200 W             |  |
| <b>Rise and fall time fast</b> <sup>4)</sup>            | 35 µs                   |  |
| <b>Load terminals (front)</b> <sup>5)</sup>             | SBU4-32                 |  |
| <b>Load terminals (rear)</b> <sup>6)</sup>              | SBU4-32                 |  |
| <b>Power consumption</b>                                | 30 VA                   |  |
| <b>Noise max. ca.</b> <sup>7)</sup>                     | 49 dB(A)                |  |
| <b>Weight ca.</b>                                       | 2.85 kg                 |  |
| <b>Housing / 3D model</b> <sup>8)</sup>                 | ½ 19" - 1 U / PLA_M2    |  |
| <b>Width x Height x Depth</b>                           | 222 x 47 x 312 mm       |  |

- Minimum input voltage for maximum static load current.
- Level and duration of the peak power depend on the previous power.
- The setting range extends max. to the possible shorttime power.
- 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 "slow": approx. 500 µs.
- PK4-30L: Binding posts for 4 mm laboratory jack and stripped wires with diameter up to 4 mm, max. 30 A  
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  
SBU4-32: Safety sockets touch-protected for 4 mm laboratory jacks, max. 32 A  
FKS20/4-SM8: Flat copper bars 20 x 4 mm vertical with hole for screw M8  
Models with copper bars (FKS) are delivered with safety covers.
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- Measured on the front from distance of 1 m.

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8. Device height incl. equipment feet. Maximum width and depth incl. handle. Installation depth without connection cable. 1 U = 44.45 mm.

|  |   |                               |
|--|---|-------------------------------|
| <b>Operating modes</b>   |   |                               |
| Basic operating modes  | CC, CV, CR, CP  |                               |
| Combined operating modes   | CC+CV, CP+CV, CR+CV, CP+CC, CR+CC, CV+CC                    |                               |
| <b>Accuracy of setting</b>   |   |                               |
|  | <b>of setting value</b>                                     | <b>of corresponding range</b> |
| Voltage  | ±0.1 %  | ±0.05 %                       |
| Current  | ±0.2 %  | ±0.05 %                       |
| Resistance<br>(at V > 5 % of voltage range)                              | ±1.4 %  | ±0.3 % of current range       |
| Power<br>(at V and I > 10 % of range)<br>(at V or I 5 ... 10 % of range) | ±0.7 %<br>±2 %  |                               |
| Resolution   | 12 bits   |                               |
| <b>Accuracy of adjustable protections</b>                                |   |                               |
|  | <b>of setting value</b>                                     | <b>of corresponding range</b> |
| Overcurrent protection   | ±0.5 %  | ±0.05 %                       |
| Undervoltage protection  | ±0.3 %  | ±0.02 %                       |
| Resolution   | 12 bits   |                               |
| <b>Accuracy of measurement</b>   |   |                               |
|  | <b>of measured (actual) value</b>                           | <b>of corresponding range</b> |
| Voltage  | ±0.1 %  | ±0.05 %                       |
| Current  | ±0.2 %  | ±0.05 %                       |
| External control voltage 0 ... 10 V                                      | ±0.2 %  | ±0.1 %                        |
| Resistance   | is calculated from voltage and current                      |                               |
| Power  | is calculated from voltage and current                      |                               |
| Resolution   | 16 bits   |                               |
| Sampling rate  | 100 µs, not triggerable                                     |                               |
| <b>Accuracy of displays (user interface)</b>                             |   |                               |
| Display user interface   | accuracy of each measurement, ±1 digit of the display value |                               |
| Resolution   | see display resolution page 22                              |                               |
| <b>Dynamic function (LIST)</b>   |   |                               |
| Number of load levels  | max. 100, with corresponding ramp, dwell and sampling times |                               |
|  | <b>min.</b>   | <b>max.</b>                   |
| Dwell time   | 1 ms  | 100 s                         |
| Ramp time  | 0 s   | 100 s                         |
| Resolution   | 1 ms  |                               |
| Accuracy of setting times  | ±0.02 %   |                               |
| Sampling times   | 1 ms ... 100 s, resolution 1 ms                             |                               |
| <b>Data acquisition</b>  |   |                               |
|  | <b>of measured (actual) value</b>                           | <b>of corresponding range</b> |
| Accuracy voltage   | ±0.1 %  | ±0.05 % ±1 LSB                |
| Accuracy current   | ±0.2 %  | ±0.05 % ±1 LSB                |
| Resolution   | 16 bits   |                               |
| <b>to external memory</b>  |   |                               |
| Sampling rate  | 0.1 ... 30 s, 0.1 s resolution                              |                               |
| Measurement data   | time stamp, voltage, current                                |                               |
| Number of measurement points   | limited by flash drive memory size                          |                               |
| File format  | .csv  |                               |

|   |  |                                   |
|---|--|-----------------------------------|
| <b>to internal memory</b>                                       |  |                                   |
| Sampling rate   | 1 ms ... 100 s, 1 ms resolution  |                                   |
| Measurement data  | time stamp, voltage, current   |                                   |
| Number of measurement points                                    | max. 100   |                                   |
| <b>Settings memories</b>  |  |                                   |
| Number of user settings   | 10, selectable (incl. programmed list)   |                                   |
| <b>I/O port: outputs and inputs</b>                             |  |                                   |
| Status and control outputs                                      | status load input (on/off, low active)<br>overload (OV, OCP, OPP, OTP, low active) |                                   |
| Output level  | 5 V  |                                   |
| Control inputs  | load input (on/off, low active)<br>control input (activates I/O port, low active)  |                                   |
| Input level   | 3 ... 30 V   |                                   |
| <b>I/O port: accuracy of analog control 0 ... 10 V</b>          |  |                                   |
|   | <b>of the setting value</b>  | <b>of the corresponding range</b> |
| Voltage   | ±0.2 %   | ±0.05 %                           |
| Current   | ±0.2 %   | ±0.05 %                           |
| Resistance<br>(at V > 5 % of voltage range)                     | ±1.6 %   | ±0.4 % of current range           |
| Power<br>(at V and I > 30 % of the corresponding range)         | ±0.55 %  | ±0.2 %                            |
| Power<br>at V and I > 5 % and < 30 % of the corresponding range | ±0.9 %   | ±0.35 %                           |
|   | input resistance of analog inputs >10 kΩ   |                                   |
| <b>I/O port: accuracy of analog monitor outputs 0 ... 10 V</b>  |  |                                   |
|   | <b>of analog signal of real value</b>  | <b>offset voltage</b>             |
| Voltage   | ±0.1 %   | ±15 mV                            |
| Current   | ±0.2 %   | ±15 mV                            |
|   | minimum load 2 kΩ  |                                   |
| <b>I/O port: permissible voltages</b>                           |  |                                   |
| Vin-io (GND - neg. load input)                                  | max. 2 V <sup>1)</sup>   |                                   |
| VioPE (GND - PE)  | max. 125 V <sup>1)</sup>   |                                   |

The diagram shows the Electronic Load with various interfaces and electrical connections. On the left, there are USB, RS-232, LAN, CAN, and GPIB (Option) ports. The main terminals are Input +, Input -, Sense +, and Sense -. Below these is the I/O port and GND/GNDA. On the right, there are voltage level indicators: Vin+PE (red), Vmax (red), Vin-PE (red), VioPE (red), and Vin-io (red). A ground symbol is shown at the bottom left.

The specified accuracies refer to an ambient temperature of 23 ±5 °C. The specified accuracies are valid when the sense lines (if available) 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<br>diode function at reverse polarity up to nominal current   |
| Input capacity                                   | see model overview  |
| Parallel operation                               | up to 5 devices in Master-Slave operation   |
| Maximum input voltage V <sub>max</sub>           | see model overview  |
| Minimum input voltage V <sub>min</sub>           | see model overview  |
| Input: permissible voltages                      |   |
| V <sub>in</sub> -PE (neg. load input - PE)       | max. 125 V <sup>1)</sup>  |
| V <sub>in</sub> +PE (pos. load input - PE)       | V <sub>max</sub> + max. 125 V <sup>1)</sup>   |
| Power  |   |
| Continuous power                                 | see model overview (at T <sub>a</sub> = 21 °C)  |
| Derating   | -1.2 %/°C for T <sub>a</sub> > 21 °C  |
| Overload capacity                                | see model overview<br>The possible short-time power depends on the temperature of the device and with that on the normal rating taken before. |
| Protection and monitoring                        |   |
| Protective devices                               | overcurrent<br>overpower<br>overtemperature   |
| Monitoring                                       | overvoltage indication<br>reverse polarity indication<br>undervoltage display (if the input voltage is too low for the set current)           |
| Terminals  |   |
| Load input                                       | see model overview  |
| Sense  | at I/O port, only at models up to 120 V   |
| Operating conditions                             |   |
| Operating temperature                            | 5 ... 40 °C   |
| Stock temperature                                | -25 ... 65 °C   |
| Max. operating height                            | 2000 m above sea level  |
| Pollution degree                                 | 2   |
| Max. humidity                                    | 80 % at 31 °C, linear decreasing to 50 % at 40 °C   |
| Min. distance rear panel - wall or other objects | 70 cm   |
| Cooling  | temperature-controlled air cooling  |
| Noise  | see model overview  |
| Mains voltage with option PLA18                  | 1/N/PE AC 85 ... 264 V 50 ... 60 Hz<br>DC 10 ... 18 V, max. 4 A, reverse polarity protected   |
| Mains cable                                      | length max. 3 m<br>cross-section of mains leads min. 1 mm <sup>2</sup>  |
| Power consumption                                | see model overview  |

| Housing   |   |
|---|---|
| Color   |   |
| Front panel   | RAL7035 (light grey)  |
| Rear panel  | stainless steel   |
| Side panels, top  | RAL7037 (dusty grey)  |
| Dimensions, weight  | see model overview  |
| Safety and EMC  |   |
| Protection class  | 1   |
| Measuring category  | 0 (CAT I according to EN 61010:2004)  |
| Electrical safety   | DIN EN 61010-1<br>DIN EN 61010-2-030  |
| EMV, CE marking   | DIN EN 55011<br>DIN EN 61326-1<br>DIN EN 61000-3-2<br>DIN EN 61000-3-3  |
| Standard interfaces   |   |
| Data interfaces   | -   |
| I/O interface   | standard I/O port (not isolated)  |
| Available options   |   |
| Data interfaces<br>PLA01<br>PLA02<br>PLA03  | USB, RS-232, Ethernet<br>GPIB (for models up from 400 W, requires PLA01)<br>CAN (requires PLA01)  |
| Mechanical options<br>PLA08<br>PLA10<br>PLA11<br>PLA12<br>PLA13<br>PLA14<br><br>PLA15<br><br>PLA16<br>PLA17 | safety cover for copper bars<br>19" installation kit for 1 device with ½ 19"; 1 U<br>19" installation kit for 2 devices with ½ 19"; 1 U<br>19" installation kit for 1 device with ½ 19"; 2 U<br>19" installation kit for 2 devices with ½ 19"; 2 U<br>19" installation kit for 1 device with ½ 19"; 2 U and 1 device with ½ 19"; 1 U<br>19" installation kit for 1 device with ½ 19"; 2 U and 2 devices with ½ 19"; 1 U<br>carrying handle for 1 device with ½ 19"; 1 or 2 U<br>19" installation kit for 1 device with 19"; 2 U |
| DC-Versorgung<br>PLA18  | 12 V DC supply (10 ... 18 V)  |
| Calibration, warranty   |   |
| FCC-PLAxx   | Factory Calibration Certificate, twice free of charge   |
| Warranty  | 2 years   |

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

Technical data of production series A, rev. 5. Subject to technical changes without notice.