# PLS1500 Series

**XP Power**

## 1500W

The PLS1500 is a programmable DC power supply with a single 1500 Watt output. With 12-bit D/A & A/D converters embedded, the power supplies come with the capability of reporting voltage and current very accurately.

The PLS1500 series provides convenient dynamic rotary controls for voltage and current adjustment. The power supplies also come with rear ports that allow remote control via USB, Ethernet, and analog control inputs. The USB and Ethernet inputs are SCPI compliant and have LabView drivers available on the National Instruments website. The PLS1500 series is LXI certified, details for using this interface can be found in the Programming Manual. The units are designed to offer either bench use or rack mounting.

### Features

- 1500W with built-in fan cooling
- Extendable voltage & current range
- 1U rack mount or bench mount
- Parallel (4 units) or series (2 units) operation (600VDC max)
- Dynamic rotary controls for Voltage & Current
- Wireless Digital Remote Sense
- Built-In Voltage and Current Measurement
- Embedded 12-bit D/A & A/D converters
- Analog interface, SCPI compliant USB 2.0 & Ethernet interfaces
- LabVIEW, IVI & USB drivers, LXI certified
- Input voltage range 90 to 265VAC
- Output voltages from 0 to 30/50/100/200/400VDC
- Overvoltage, overcurrent & overpower protection
- Self-test & calibration functions
- 0°C to +40°C operating temperature
- 3 year warranty

### Applications

Industrial Electronics

Technology

Semiconductor Manufacturing

Laboratory

### Resource Links

**Click Here** for the Programming Manual

**Click Here** for the User Manual

### Models & Ratings

| Model Number [1] | Voltage | Current | Power |
|---|---|---|---|
| PLS15003070 | 30V | 70A | |
| PLS15005040 | 50V | 40A | |
| PLS150010020 | 100V | 20A | 1500W |
| PLS150020010 | 200V | 10A | |
| PLS15004005 | 400V | 5A | |

**Notes:**

1. PLS1500 series products are shipped without a mains lead. For mains lead please consult sales.

## Specification

**Note:** Unless otherwise stated, specifications are warranted over the ambient temperature range of 0 to 40°C.

| | | PLS15003070 | PLS15005040 | PLS150010020 | PLS150020010 | PLS15004005 |
|---|---|---|---|---|---|---|
| DC Output Ratings[1] | Voltage | 30V | 50V | 100V | 200V | 400V |
| | Current | 70A | 40A | 20A | 10A | 5A |
| Output Ripple & Noise | CV p-p[3] | 60mV | 100mV | 100mV | 100mV | 200mV |
| | CV rms[4] | 20mV | 100mV | 150mV | 150mV | 50mV |
| Load Regulation (change from 10% - 90% load) | Voltage | 15mV | 25mV | 50mV | 100mV | 200mV |
| | Current | 15mA | 15mA | 15mA | 15mA | 15mA |
| Line Regulation (change from 100 - 132 or 180 - 260VAC input)[6] | Voltage | 15mV | 25mV | 50mV | 100mV | 200mV |
| | Current | 15mA | 15mA | 15mA | 15mA | 15mA |
| Programming Accuracy[1,2] | Voltage 0.1%+ | 15mV | 25mV | 50mV | 100mV | 200mV |
| | Current 0.1%+ | 15mA | 15mA | 15mA | 15mA | 15mA |
| Measurement Accuracy | Voltage 0.1%+ | 15mV | 25mV | 50mV | 100mV | 200mV |
| | Current 0.1%+ | 15mA | 15mA | 15mA | 60mA | 60mA |
| Transient Recovery Time[5] | Time | ≤1ms | ≤1ms | ≤1ms | ≤1ms | ≤1ms |

**Supplemental Characteristics** (supplemental characteristics are not warranted but are descriptions of typical performance determined either by design or type testing)

| | | | | | | |
|---|---|---|---|---|---|---|
| Output Response Time (time to settle to within ±1% of the rated output, with resistive load) | Up, Full Load | 0.08s | 0.08s | 0.08s | 0.08s | 0.08s |
| | Down, Full Load | 0.08s | 0.08s | 0.08s | 0.08s | 0.08s |
| | Down, No Load | 0.5s | 0.5s | 0.5s | 0.5s | 0.5s |
| Command Response Time[7] | Time | 50ms | 50ms | 50ms | 50ms | 50ms |
| Data Readback Transfer Time[8] | Time | 5ms | 5ms | 5ms | 5ms | 5ms |
| Remote Sense Compensation | Volts/Load Lead | 1V | 1V | 2V | 4V | 4V |
| Over-voltage Protection | Range | 0.5 - 33V | 0.5 - 55V | 0.5 - 110V | 0.5 - 220V | 0.5 - 440V |
| | Accuracy | 0.3V | 0.5V | 1V | 2V | 14V |
| Output Ripple & Noise[3] | CC r.m.s. | 7mA | 5mA | 5mA | 5mA | 10mA |
| Programming Resolution Measurement Resolution | Voltage 0.05%+ | 10mV | 25mV | 50mV | 100mV | 200mV |
| | Current 0.05%+ | 20mA | 20mA | 10mA | 5mA | 2.5mA |
| Front Panel Display Accuracy | Voltage 0.1%+ | 10mV | 25mV | 50mV | 100mV | 200mV |
| | Current 0.1%+ | 33mA | 20mA | 10mA | 5mA | 2.5mA |

**Notes:**

1. Minimum voltage is guaranteed at greater than 1% of the rated output voltage.
2. Minimum current is guaranteed at greater than 1% of the rated output current.
3. Measured with 20MHz bandwidth and excluding line frequency ripple.
4. Line frequency ripple measured with 20MHz bandwidth.
5. Time for output voltage to recover within 0.5% of its rated output for a load change from 10 to 90% of its rated output current.
6. Voltage set point from 10% to 100% of rated output up to 20MHz.
7. Add this to the output response time to obtain the total programming time.
8. Time to provide data back to the controller using LAN interface (does not include A/D conversion time).

# PLS1500 Series

## General

### Rotary controls

The digital rotary controls allow both fine and rapid adjustment of the output voltage and current. They are velocity sensitive so that a slow turn allows fine adjustment of voltage or current and rapid rotation quickly adjusts voltage or current over a large range

### Precise voltage and current measurement

The PLS1500 series offers the capability to measure voltage & current accurately (read back). This capability is available from the display or the readings may be read into the controlling device

### Extendable Range

The Power Supply will provide any voltage or current combination between zero & its stated maximum provided it doesn't exceed 1k5W, this allowing the user more flexibility through offering a wider range of voltages and currents

### DC output terminals

**PLS1500PS3070:** Bus Bars (CN1)

**All other models:** Phoenix Contact 1709681 (CN2)

### Output terminal isolation

No output terminal may be more than 600VDC from any other terminal or chassis ground

### Protection

**OVP** Over voltage protection

**OCP** Over current protection

**OPP** Over power protection

### Series and parallel capability

Up to 4 units can be connected in parallel (master/slave mode) and up to 2 units can be connected in series

### Analog connection

**Analog connector (CN3):** See connection table

### Analog programming output voltage and current

**Input signal:** Selectable; 0 to 3V, 0 to 5V or 0 to 10V full scale

**Input impedance:** 0 to 10kΩ full scale

### Interfaces

**USB 2.0 (CN5)**

**10/100 LAN (CN4)**

**Web server:** Built-in Web server requires Internet Explorer 5+ or Firefox, or Chrome

### AC input

**Input connector:** IEC Inlet (CN6)

**Input range:** 100 – 240VAC; 47 – 63Hz

**Input current:** 16A @ 100VAC nominal, 8A @ 200VAC nominal

**Power factor:** >0.95 at nominal input and rated output power

**Efficiency:** >85% for 1500W units at full power out

**Inrush current:** <35A for 1500W units

### Regulatory compliance

**EMC:** European EMC directive 89/336/EEC for Class A products. This ISM device complies with Canadian ICES-001

**Safety:** European Low Voltage Directive IEC60950-1 and IEC62368-1. US and Canadian safety standards. Any LEDs used in this product are Class 1 as per IEC 825-1

**Acoustic noise declaration:** Emission directive: Sound pressure Lp <75 dB(A) At operator position, normal operation, according to EN 27779 (Type Test)

### Environmental conditions

**Environment:** Indoor use, installation category II (AC input), pollution degree 2

**Operating temperature:** 0°C to 40°C @ 100% load

**Storage temperature:** –20°C to 70°C

**Operating humidity:** 30% to 90% relative humidity (no condensation)

**Storage humidity:** 10% to 95% relative humidity (no condensation)

**Altitude:** Up to 3000m
Derate the output current by 2%/100m above 2000m
Derate the maximum ambient temperature by 1°C/100m above 2000m
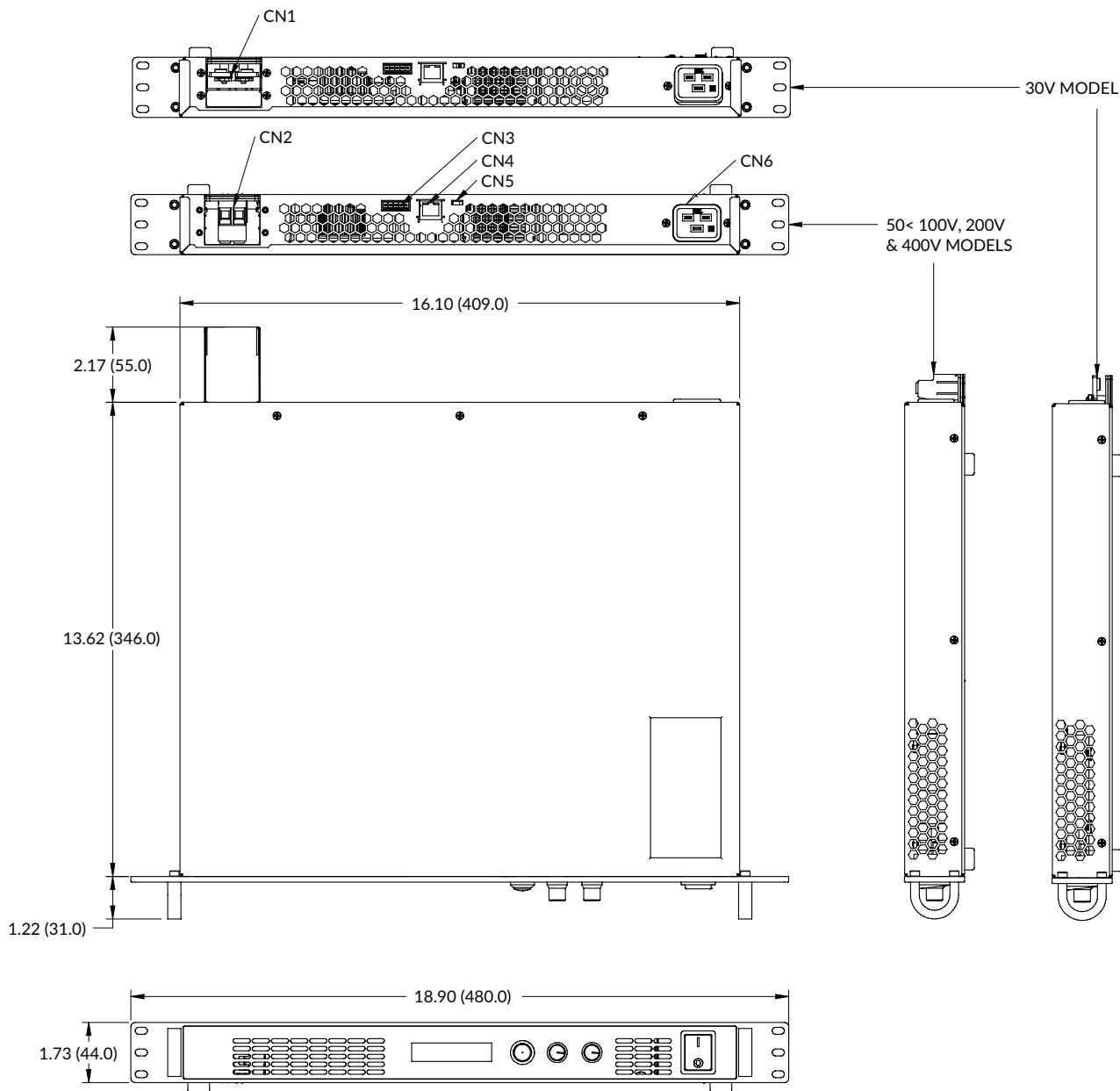
### Dimensions and weight

**Dimensions:** 18.9" x 15.79" x 1.73" (480.0 x 401.0 x 44.0 mm)
Excluding connectors, rotary controls and feet

**Weight:** 5.8kg (12.8lb)
When mounting in a 19" rack it is recommended to use side rails or a tray to support the unit

## Mechanical Details

CN1

30V MODEL

CN2

CN3
CN4
CN5

CN6

50< 100V, 200V
& 400V MODELS

16.10 (409.0)

2.17 (55.0)

13.62 (346.0)

1.22 (31.0)

18.90 (480.0)

1.73 (44.0)

| CN3 Analog Pin-Out | |
|---|---|
| **Pin** | **Function** |
| 1 | 3.0V Reference |
| 2 | Ground |
| 3 | Voltage Control Input |
| 4 | Current Control Input |
| 5 | Sharing Output |

**Notes:**

1. Dimensions are in inches (mm).
2. Unit can be used on the bench or rack mountable with no changes. If required, the feet can be removed.