

**BERTAN****PRECISION HIGH VOLTAGE  
POWER SOLUTIONS**

A Del Power Conversion Group Company \* 800-966-2776 \* info@bertan.com

***NIM 313B / 315B / 320 / 323 / 325 / 353 / 355*****AC Line Powered Precision NIM DC Output High Voltage Power Supplies**

- Up to 10 kV, for All Detector Types
- Single and Double Width NIM Models
- 0.001% Regulation
- Low Ripple and Noise
- Voltage & Current Metering
- Short Circuit and Arc Protected
- Reversible Polarity Models
- Precision Front Panel Control
- Remote Analog Programming
- Custom and OEM Designs Available
- CE Certified (except 353, 355)

***General***

The Models 313B, 315B, 320, 323, 325, 353 and 355 are precision regulated linear power supplies ideally suited for use with sensitive detectors. These stable, low noise high voltage power supplies are short circuit and arc protected for safe, reliable operation. These units require ac line input power (either 115 or 230 Vac) and therefore can operate without a NIM bin dc power supply.

Models 353 and 355 are single width units. Models 313B, 315B, 320, 323 and 325 are double width units. All models, except for the 10kV Model 320, feature reversible polarity. Front panel LED indicators clearly identify the polarity setting of the high voltage output. Model 320 must be ordered with the polarity specified as Positive or Negative (suffix P or N).

Models 323 and 325 have digital front panel metering for both output voltage and current. All other models except for the 10kV Model 320 contain front panel analog output high voltage metering.

In addition to the precision front panel controls, all double width models (313B, 315B, 320, 323 and 325) can be remotely programmed over their full output voltage range using a 0 to -5V analog programming source. Single width models (353 and 355) have a provision for remote logic inhibit control.

***Output***

| MODEL | VOLTAGE           | CURRENT    | RIPPLE<br>(pk-pk) | SIZE         |
|-------|-------------------|------------|-------------------|--------------|
| 353   | 0 to $\pm 3,000V$ | 0 to 2 mA  | 5 mV              | single width |
| 355   | 0 to $\pm 5,000V$ | 0 to 1 mA  | 10 mV             | single width |
| 313B  | 0 to $\pm 3,000V$ | 0 to 10 mA | 10 mV             | double width |
| 315B  | 0 to $\pm 5,000V$ | 0 to 5 mA  | 25 mV             | double width |
| 323   | 0 to $\pm 3,000V$ | 0 to 10 mA | 10 mV             | double width |

|      |                   |           |        |              |
|------|-------------------|-----------|--------|--------------|
| 325  | 0 to $\pm 5,000V$ | 0 to 5 mA | 25 mV  | double width |
| 320P | 0 to +10,000V     | 0 to 2 mA | 100 mV | double width |
| 320N | 0 to -10,000V     | 0 to 2 mA | 100 mV | double width |

**Polarity:**

Models 320P and 320N are fixed polarity. Polarity reversal for single width models 353 and 355 is achieved by rotating an internal polarity selector plug. Models 313B, 315B, 323, and 325 have a screwdriver accessible polarity switch at the top of the unit. The polarity setting is indicated by an LED on the front panel.

**Input****Single Width Models 353 and 355:**

115V  $\pm 10\%$ , 1/4 Ampere, 50-60 Hz or 230V  $\pm 10\%$ , 1/8 Ampere, 50-60 Hz

**Double Width Model 313B, 315B, 320, 323 and 325:**

115V  $\pm 10\%$ , 1 Ampere, 50-60 Hz or 230V  $\pm 10\%$ , 1/2 Ampere, 50-60 Hz

**Performance**

Specifications apply to all models unless otherwise indicated

**Line Regulation:**

$\pm 0.001\%$  for  $\pm 10\%$  input change in applied ac line voltage

**Load Regulation:**

$\pm 0.002\%$  for 0 to maximum rated output current change

**Ripple:**

See chart above

**Temperature Coefficient (0 to + 50°C):**

50 ppm per °C

**Stability (after 1/2 hr. warm-up):**

0.01% per hour, 0.02% per 8 hours

**Features****Front Panel Meter:**

Models 313B and 353 have a 0 to 3kV high voltage output meter. Models 315B and 355 have a 0 to 5kV high voltage output meter. The meter accuracy is  $\pm 5\%$  of full scale

Models 323 and 325 have a 3½ digit digital meter for monitoring both high voltage and output current. A selector switch determines which parameter is displayed. The meter accuracy is  $\pm(0.5\% + 10V)$  for output voltage readings and  $\pm(0.5\% + 10\mu A)$  for output current readings

**Front Panel Controls:**

Calibrated, direct reading, front panel output voltage controls provide an accuracy of  $\pm(0.25\%$  of reading + 0.05% of maximum)

**Resolution:**

Models 313B, 315B and 353 employ a 500V/step switch and a 10-turn potentiometer to provide adjustment over the output high voltage range. The resolution and repeatability for Model 313B and 315B is 500mV and for the Model 353 is 1V

All other units (Models 320, 323, 325 and 355) employ a 3-turn, 5-turn or 10-turn potentiometer for continuous coverage of their respective 3kV, 5kV or 10kV ranges. The resolution and repeatability for Models 320, 323 and 325 is 5V. The resolution and repeatability for Model 355 is 10V

**Remote Control:**

Models 353 and 355 have provision for remote inhibit gating of the high voltage by means of a gated transistor collector or relay closure to ground applied at a rear panel BNC connector

Models 313B, 315B, 320, 323 and 325 have remote high voltage programming capability. The output can be programmed from 0 to maximum output voltage by means of a 0 to -5V applied control voltage. Programming accuracy is  $\pm$  (0.1% of setting + 0.1% of maximum). The remote programming input impedance is 4.99 kilohms. Programming is applied via a rear panel BNC connector

**Current Limit:**

Automatic current limiting occurs at approximately 110% of the maximum rated output current. Supply is self-restoring upon removal of cause of limit condition

**Protection:**

Arc and short circuit limiting, self-restoring

***Mechanical***

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**Size:**

All Models are standard NIM single or double width modules  
Single width models: 1.35" W x 8.7" H x 9.7" D (34 x 221 x 246mm)  
Double width models: 2.7" W x 8.7" H x 9.7" D (69 x 221 x 246mm)

**Weight:**

Models 353 and 355 weigh 4.5 lbs (2.1kg)  
Models 313B, 315B, 320, 323 and 325 weigh 11 lbs (5 kg).

**High Voltage Connectors:**

All models, except for the 10kV Model 320 have an SHV panel receptacle, Kings type 1707-1. The mating connector (ordered separately) is an SHV plug, Kings type 1705-14 (BERTAN part number PAE)

Model 320 has a 10KV panel receptacle, Kings type 1064-1. The mating connector (ordered separately) is a 10KV plug, Kings type 1065-1 (BERTAN part number PBA)

**Power Input Connector:**

Standard, captive, North American 3-wire line cord and plug

**Inhibit Input Connector:**

Models 353 and 355 have a BNC receptacle, UG-290/U, for application of the inhibit gate. The mating connector (ordered separately) is a BNC plug, UG-88C/U

**Remote Programming:**

Models 313B, 315B, 320, 323 and 325 have a BNC receptacle, UG-290/U for the remote programming

All models except the 320P and 320N have reversible polarity and can be set for either positive or negative output.

### *Custom Models*

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All NIM models can be economically adapted to satisfy custom or OEM requirements. Other output voltage and/or current ratings, custom control and programming features, remote monitoring or special connectors are some of the varied requirements which can be satisfied. Contact **sales@bertan.com** for a prompt review of your application.

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