

# iDRN-PS-1000

UNIVERSAL SWITCHING POWER SUPPLY  
Compact DIN-Rail 24 Volt

Operator's Manual



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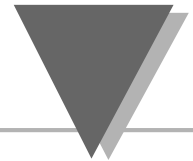
It is the policy of NEWPORT to comply with all worldwide safety and EMC/EMI regulations that apply. NEWPORT is constantly pursuing certification of its products to the European New Approach Directives. NEWPORT will add the CE mark to every appropriate device upon certification.

The information contained in this document is believed to be correct but NEWPORT Electronics, Inc. accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

**WARNING:** These products are not designed for use in, and should not be used for, patient connected applications.



This device is marked with the international caution symbol. It is important to read the Setup Guide before installing or commissioning this device as it contains important information relating to safety and EMC.



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# GENERAL INFORMATION AND FEATURES

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The compact iDRN power supplies are designed to supply well-regulated 24 volt DC power to sensors, signal conditioners, data acquisition systems and high level logic equipment.



## *Features*

Significant iDRN features include:

- Tested isolation, primary to output
- Recessed live parts and connector screws
- 35mm DIN rail mounting
- Wide input voltage tolerances
- Protective varistor input shunt
- Input AC spike rejection with LC filters
- LED power-on lamp
- Over-temperature protection
- Short circuit protection
- Low-ripple, well-regulated design

# SAFETY CONSIDERATIONS

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This device is marked with the international Caution symbol. It is important to read this manual before installing or commissioning this device as it contains important information relating to Safety and EMC (Electromagnetic Compatibility).



## Unpacking & Inspection

Unpack the instrument and inspect for obvious shipping damage. Do not attempt to operate the unit if damage is found.

This instrument is a DIN rail mount device. Installation of this instrument should be done by Qualified personnel. In order to ensure safe operation, the following instructions should be followed.

This instrument has no power-on switch. An external switch or circuit-breaker shall be included in the building installation as a disconnecting device. It shall be marked to indicate this function, and it shall be in close proximity to the equipment within easy reach of the operator. The switch or circuit-breaker shall not interrupt the Protective Conductor (Earth wire), and it shall meet the relevant requirements of IEC 947-1 and IEC 947-3 (International Electrotechnical Commission). The switch shall not be incorporated in the mains supply cord.

Furthermore, to provide protection against excessive energy being drawn from the mains supply in case of a fault in the equipment, an overcurrent protection device shall be installed.



- The **Protective Conductor** must be connected for safety reasons. Check that the power cable has the proper Earth wire, and it is properly connected. It is not safe to operate this unit without the Protective Conductor Terminal connected.



- Do not exceed voltage rating on the label located on the top of the instrument housing.
- Always disconnect power before changing signal and power connections.
- Do not use this instrument on a work bench without its case for safety reasons.
- Do not operate this instrument in flammable or explosive atmospheres.
- Do not expose this instrument to rain or moisture.
- Unit mounting should allow for adequate ventilation to ensure instrument does not exceed operating temperature rating.
- Use electrical wires with adequate size to handle mechanical strain and power requirements. Install without exposing bare wire outside the connector to minimize electrical shock hazards.

## EMC Considerations

- Whenever EMC is an issue, always use shielded cables.
- Never run signal and power wires in the same conduit.
- Use signal wire connections with twisted-pair cables.
- Install Ferrite Bead(s) on signal wires close to the instrument if EMC problems persist.

**Warning!**

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If a rail assembly is to be transported, then disconnection, dismounting and separate packing of the power supply is recommended.

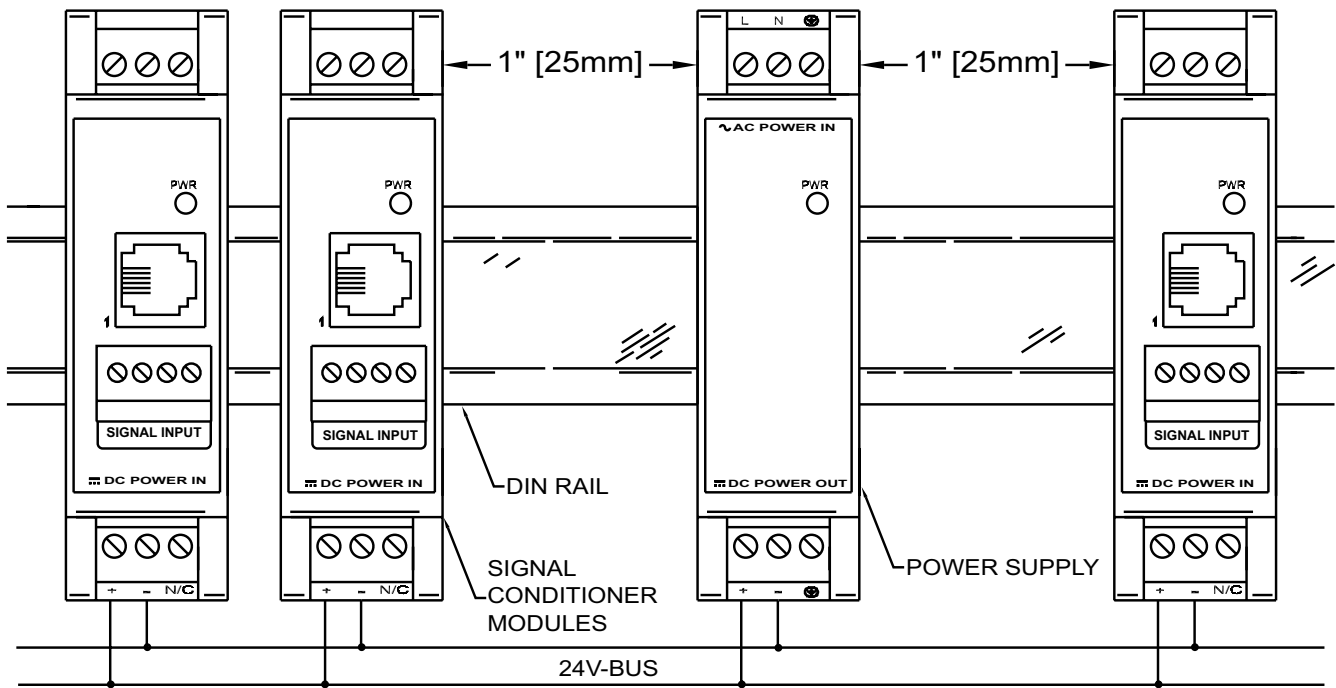
For units that must be shipped installed on the rail, additional bracing to resist transportation shocks is recommended.

Do not attempt to install or connect to the power supply when the mains are energized.

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## 3.1 Installation Clearance

Ensure that there is enough room for mounting the power supply unit. There should be a minimum of 1" [25mm] spacing to allow sufficient air circulation for proper cooling.

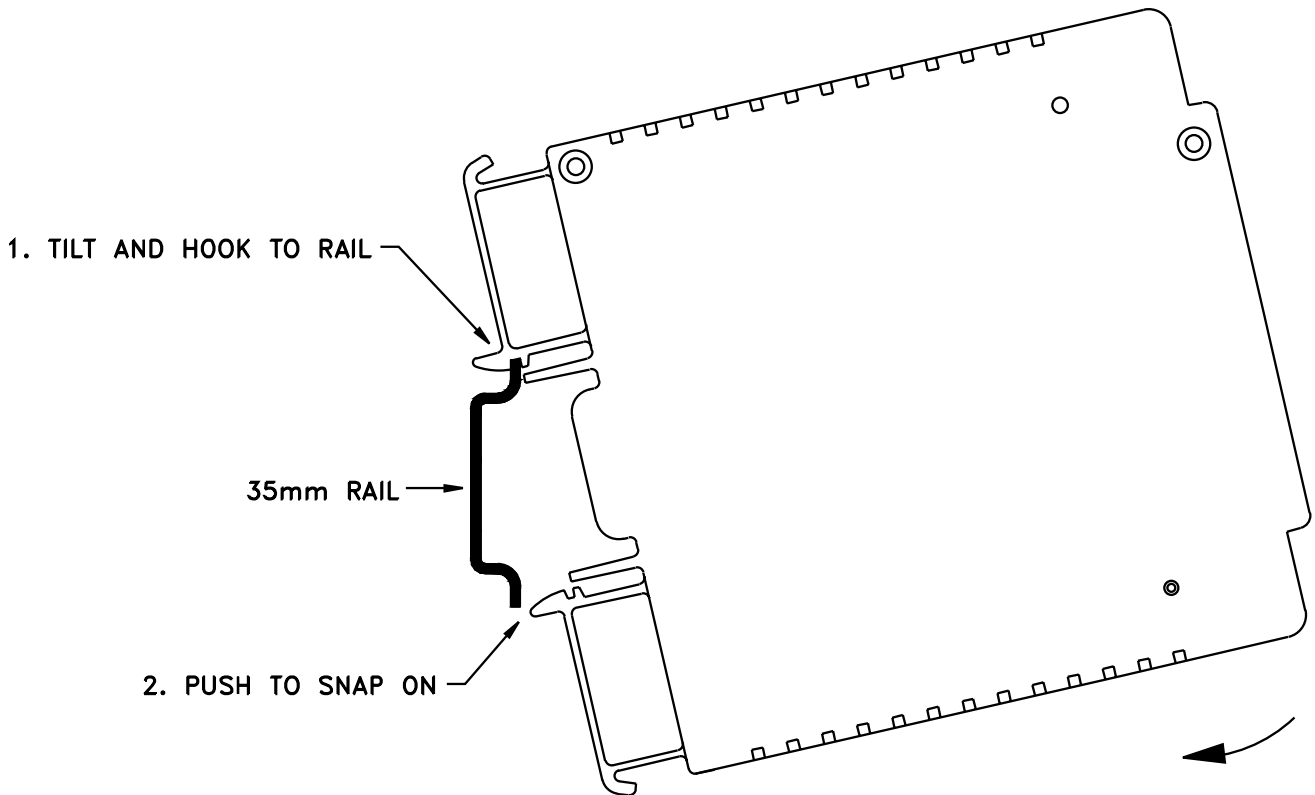


**Figure 3.1 — Mounting**

### 3.2 Mounting on DIN Rail

To install unit onto DIN Rail

1. Tilt unit, position mounting slot onto DIN Rail, as shown.
2. Push unit towards DIN Rail and it will snap into place.

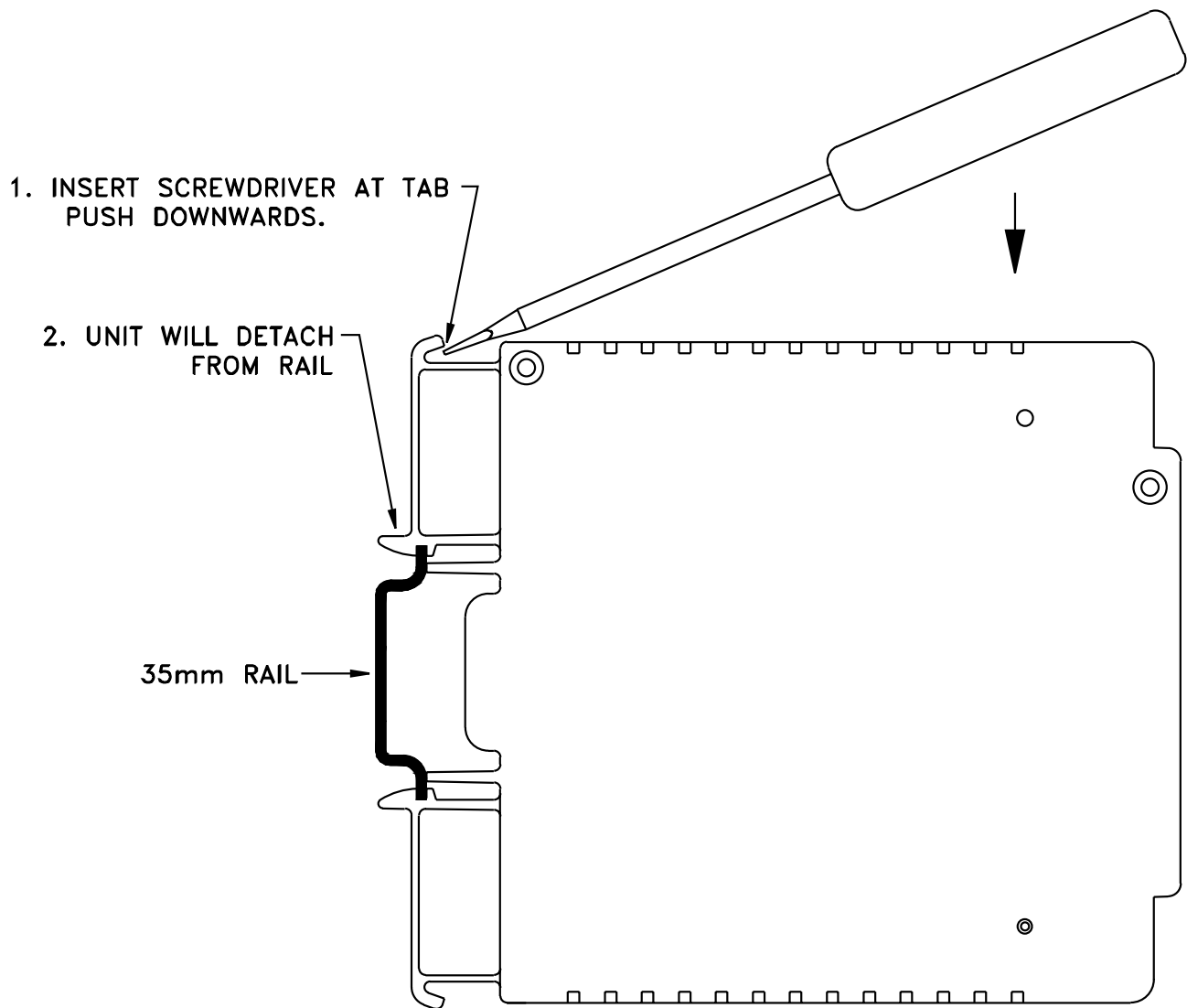


**Figure 3.2 – Mounting on 35mm DIN Rail**



## 3.3 Removal of Unit

1. Insert flat screw-driver into tab and push downwards.
2. Unit will detach from DIN Rail.

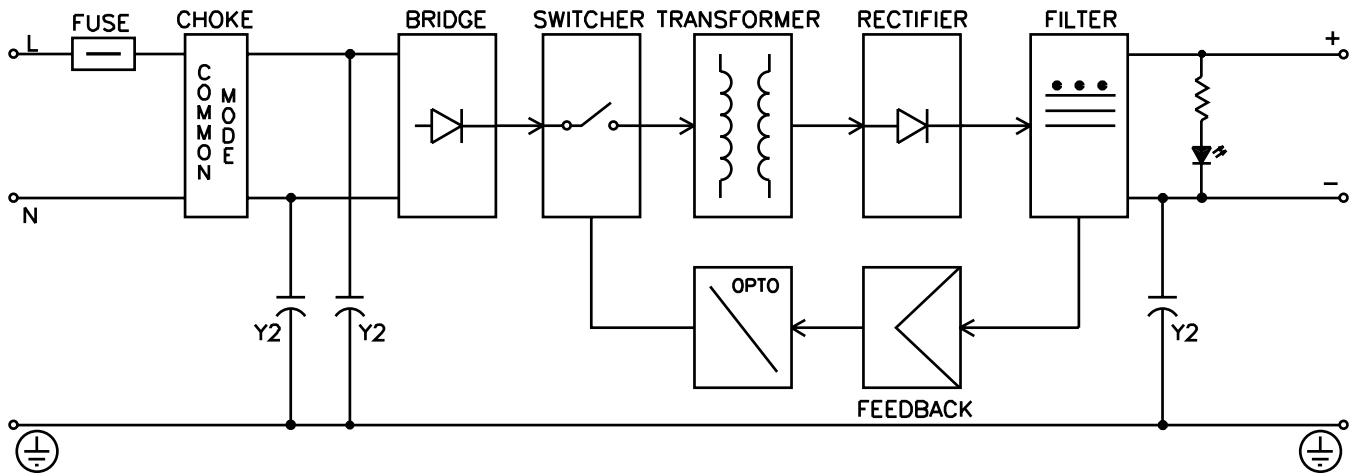


**Figure 3.3 — Removal of Unit**

# 4

## INPUT AND OUTPUT CONNECTIONS

### 4.1 Block Diagram of Power Supply



**Figure 4.1 — Block Diagram**

### 4.2 Wiring

**Warning:** Do not turn on the ac power to the power supply unit until you have completed all output connections. Failure to do so may result in injury!

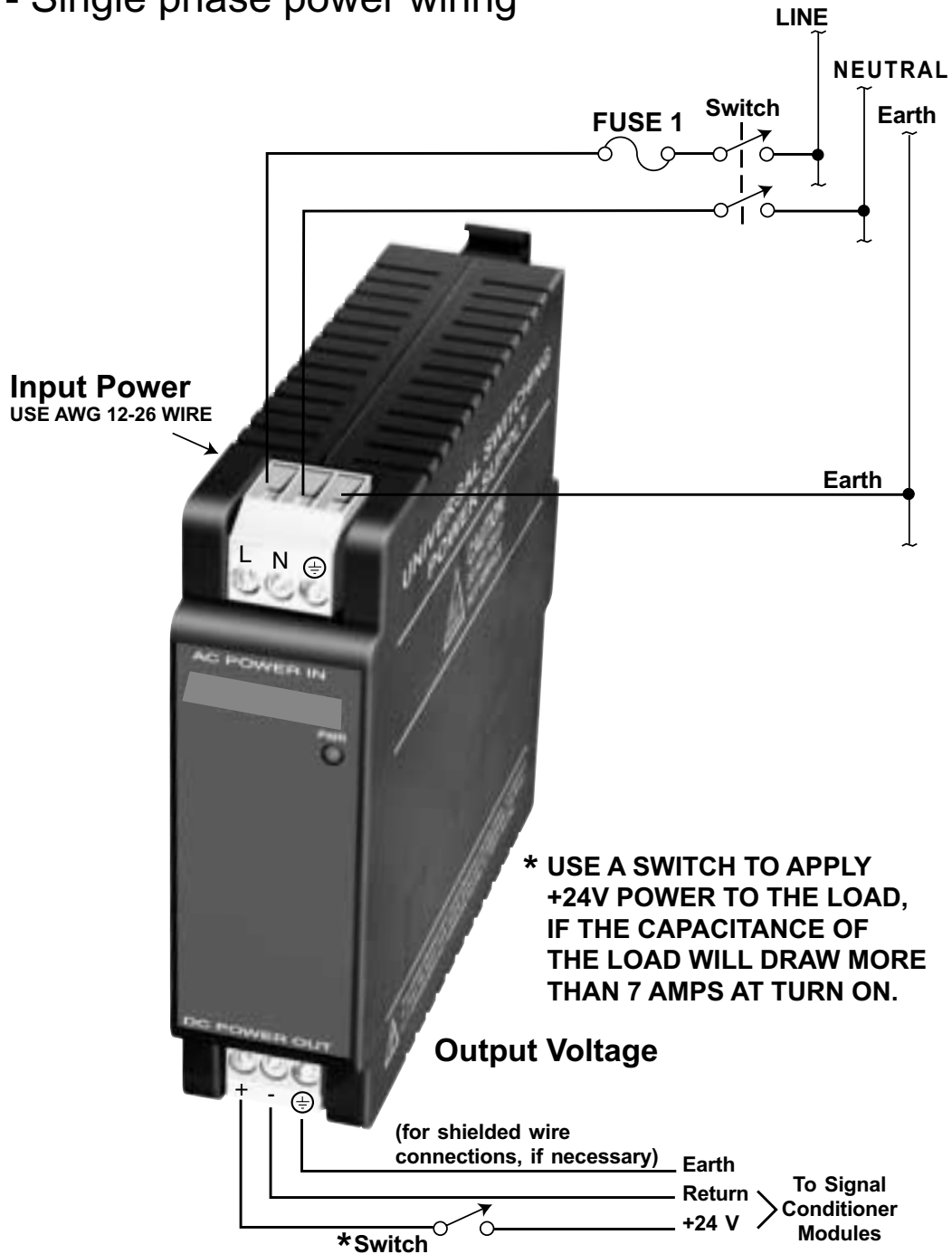
This device must only be installed electrically by a specially trained electrician with corresponding qualifications.

**Warning:** To avoid potential electric shock use National Electrical Code (NEC) safety practices when wiring and connecting this unit to a power source.

# INPUT AND OUTPUT CONNECTIONS

## 4.2 Wiring (Continued)

115Vac - Single phase power wiring



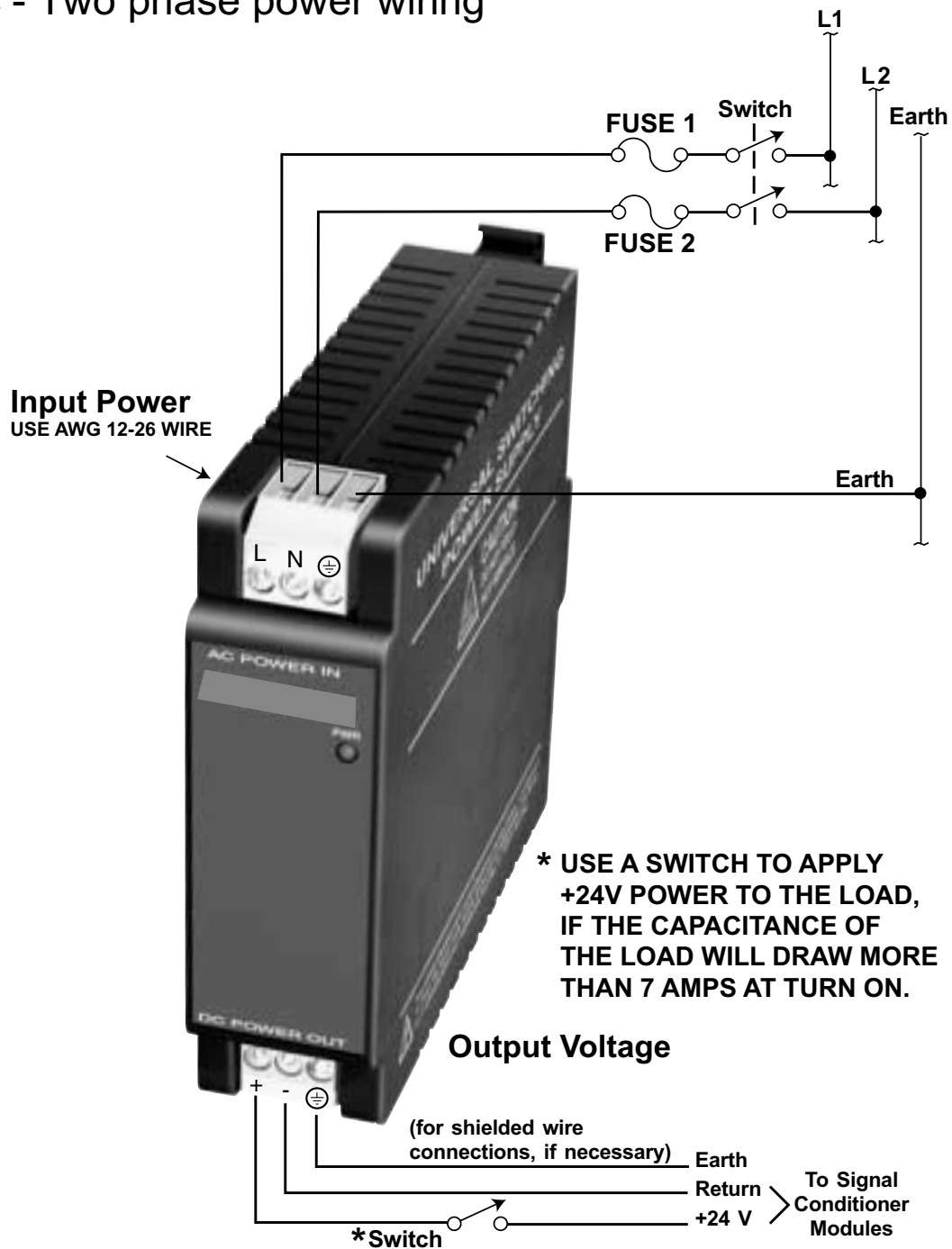
**Figure 4.2— Wiring for 115Vac - Single Phase**

# 4

## INPUT AND OUTPUT CONNECTIONS

### 4.3 Wiring (Continued)

230Vac - Two phase power wiring



**Figure 4.3— Wiring for 230Vac - Two Phase**

**INPUT POWER**

|                         |                                      |
|-------------------------|--------------------------------------|
| Input Voltage:          | 115 - 240Vac $\pm$ 10%               |
| Frequency:              | 50/60 Hz                             |
| Current:                | 0.400A @ 103Vac<br>0.190A @ 265Vac   |
| Overvoltage Protection: | 275 Volt Varistor                    |
| Overcurrent Protection: | Fuse TR-5 800mA Time-lag / IEC 127-3 |
| Input Wattage:          | 26 Watts                             |

**OUTPUT POWER**

|  |   |
|--|---|
| Output Voltage:  | 24Vdc $\pm$ 2% @ 850mA (Resistive Load)   |
| Output Wattage:  | 20 Watts*   |
| * For higher output wattage greater than 20 watts follow the chart on section 7, Figure 6.2. |   |
| Ripple:  | less than 100 mVrms   |
| Operating Indicator:   | Front Panel LED   |
| Short-Circuit/<br>Overload Protection:   | Current limiting with automatic short-circuit protection and temperature shutdown accomplished by the switcher. |
| Maximum number of<br>Signal Conditioner<br>modules powered:                                  | Depends on module used and configuration (6-10 modules)   |

**GENERAL**

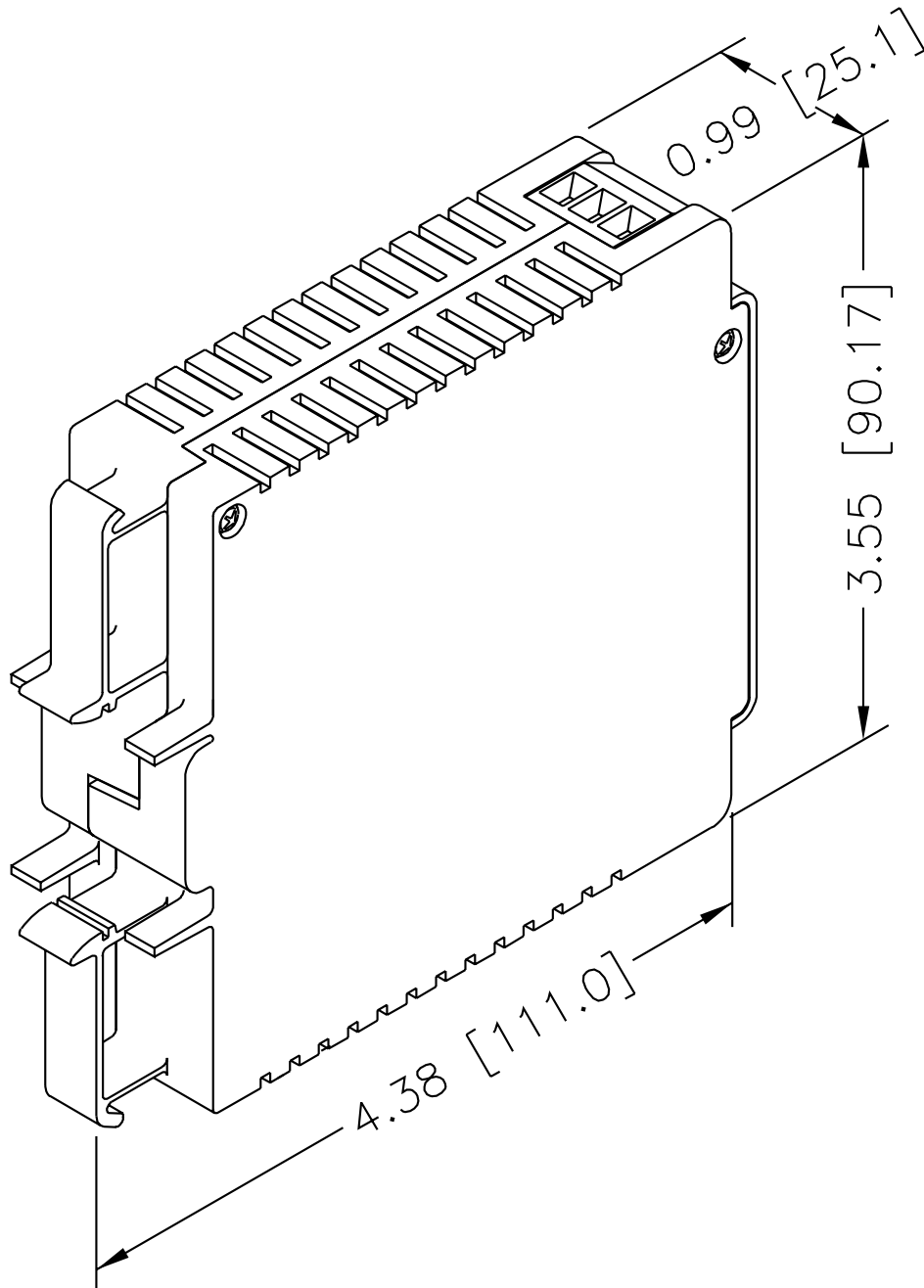
|                             |   |
|-----------------------------|---|
| Operating Temperature:      | 23° to 122°F(-5° to 50°C)   |
| Storage Temperature:        | -40° to 176°F(-40° to 80°C)   |
| Mounting:                   | 35mm DIN Rail   |
| Size:                       | Height: 3.55" (90mm)<br>Width: 0.99" (25mm)<br>Depth: 4.38" (111mm)                 |
| Weight:                     | 0.3 lbs. (0.14 kg)  |
| Equipment Type:             | CLASS I   |
| Overvoltage:                | CAT II  |
| Pollution Degree:           | 2   |
| Insulation input to output: | Dielectric strength to 2500V transient based on EN61010 for 265Vrms working voltage |

**WIRE CONNECTIONS**

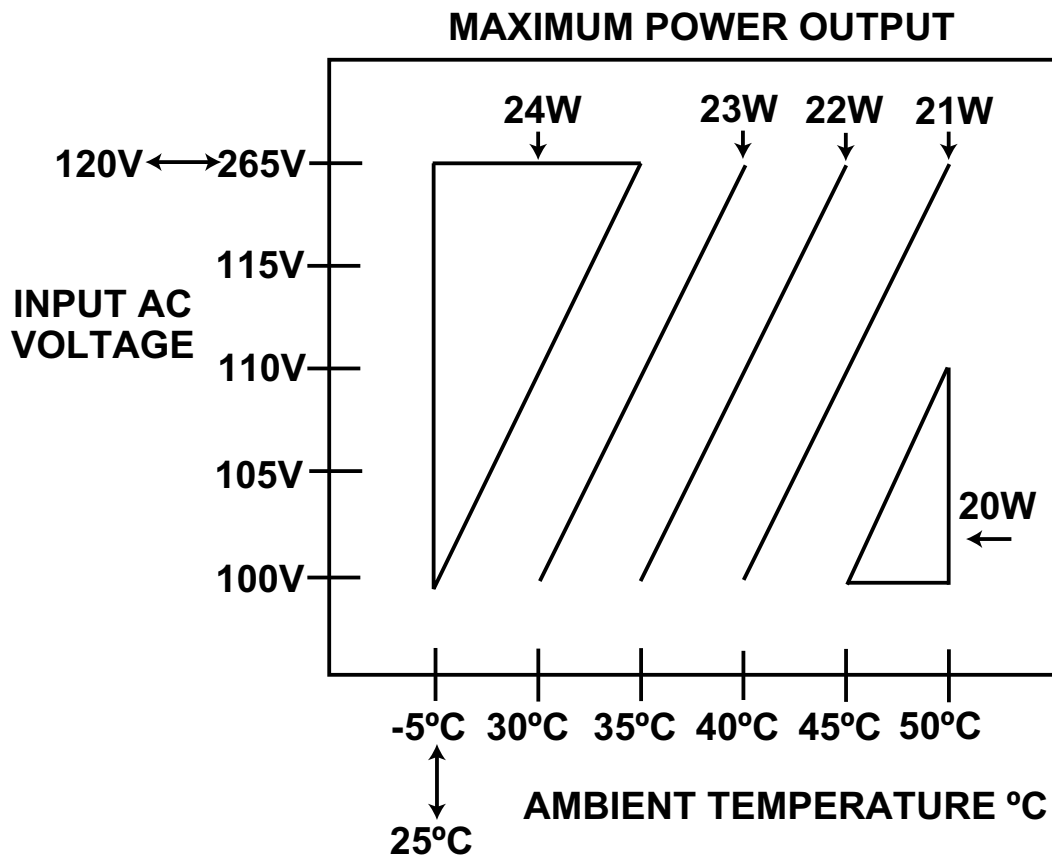
Screw down wire clamps, AWG 12 to 26 (ferrules recommended for stranded wire).

# DIMENSIONS

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| <b>AC INPUT CURRENT @ 100VAC INPUT</b> |                   |
|--|-------------------|
| <b>OUTPUT POWER</b>                    | <b>AC CURRENT</b> |
| 20W                                    | 338mA             |
| 21W                                    | 355mA             |
| 22W                                    | 373mA             |
| 23W                                    | 392mA             |
| 24W                                    | 412mA             |



Example: If ambient is 50°C, maximum wattage is 21W max. for 120-265Vac. If unit is operated at 21W at an input voltage of 100V, the maximum ambient temperature allowed is 40°C.

**Figure 6.2 — Temperature Derating Graph**



# NOTES



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## Warranty/Disclaimer

NEWPORT ELECTRONICS, INC. warrants this unit to be free of defects in materials and workmanship for a period of one (1) year from date of purchase. In addition to NEWPORT's standard warranty period, NEWPORT ELECTRONICS will extend the warranty period for one (1) additional year if the warranty card enclosed with each instrument is returned to NEWPORT.

If the unit should malfunction, it must be returned to the factory for evaluation. NEWPORT's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by NEWPORT, if the unit is found to be defective it will be repaired or replaced at no charge. NEWPORT's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of being damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of NEWPORT's control. Components which wear are not warranted, including but not limited to contact points, fuses, and triacs.

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## Return Requests/Inquiries

Direct all warranty and repair requests/inquiries to the NEWPORT Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO NEWPORT, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM NEWPORT'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting NEWPORT:

1. P.O. number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult NEWPORT for current repair charges. Have the following information available BEFORE contacting NEWPORT:

1. P.O. number to cover the COST of the repair,
2. Model and serial number of product, and
3. Repair instructions and/or specific problems relative to the product.

NEWPORT's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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**1-800-6397678<sup>®</sup>**  
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Newport Electronics, Inc.  
2229 South Yale Street • Santa Ana, CA • 92704 • U.S.A.  
TEL: (714) 540-4914 • FAX: (714) 546-3022  
Toll Free: 1-800-639-7678 • <http://www.newportUS.com> • e-mail: [info@newportUS.com](mailto:info@newportUS.com)  
ISO 9001 Certified

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Newport Technologies, Inc.  
976 Bergar • Laval (Quebec) • H7L 5A1 • Canada  
TEL: (514) 335-3183 • FAX: (514) 856-6886  
Toll Free: 1-800-639-7678 • <http://www.newport.ca> • e-mail: [sales@newport.ca](mailto:sales@newport.ca)

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Newport Electronics, Ltd.  
One Omega Drive • River Bend Technology Centre  
Northbank, Irlam • Manchester M44 5BD • United Kingdom  
Tel: +44 161 777 6611 • FAX: +44 161 777 6622  
Toll Free: 0800 488 488 • <http://www.newportuk.co.uk> • e-mail: [sales@newportuk.co.uk](mailto:sales@newportuk.co.uk)

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Newport Electronics B.V.  
Postbus 8034 • 1180 LA Amstelveen • The Netherlands  
TEL: +31 20 3472121 • FAX: +31 20 6434643  
Toll Free: 0800 0993344 • <http://www.newport.nl> • e-mail: [sales@newport.nl](mailto:sales@newport.nl)

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Newport Electronics spol s.r.o.  
Rudé armády 1868, 733 01 Karviná 8 • Czech Republic  
TEL: +420 69 6311899 • FAX: +420 69 6311114  
Toll Free: 0800-1-66342 • <http://www.newport.cz> • e-mail: [sales@newport.cz](mailto:sales@newport.cz)

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Newport Electronics GmbH  
Daimlerstrasse 26 • D-75392 Deckenpfronn • Germany  
TEL: 49 7056 9398-0 • FAX: 49 7056 9398-29  
Toll Free: 0800 / 6397678 • <http://www.newport.de> • e-mail: [sales@newport.de](mailto:sales@newport.de)

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Newport Electronique S.A.R.L.  
9, rue Denis Papin • 78190 Trappes • France  
TEL: +33 130 621 400 • FAX: +33 130 699 120  
Toll Free: 0800-4-06342 • <http://www.newport.fr> • e-mail: [sales@newport.fr](mailto:sales@newport.fr)

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Mexico and Latin America  
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