



## DC-DC CONVERTERS - NARROW PROFILE (DN8)

Acopian DC-DC converters are high performance units that include short circuit, overvoltage and thermal protection, 'soft start' operation, and a status light that shows operational status at a glance: the green 'DC out' indicator signals normal operation, and extinguishes when the current limit control is activated by a short circuit or by activation of the overvoltage protection circuit due to an overvoltage condition.

### INSTALLATION

Threaded holes on the bottom and right side surface may be used for mounting. An accessory Mounting Kit (model NP6) is available to enable mounting the converter when the opposite side of the mounting surface is inaccessible. DIN rail Mounting Kits are also available.

It is very important to allow for the free circulation of air around and THROUGH the converter (do not block fan intake or exhaust). Failure to do so will result in thermal shutdown or possible damage to the converter.

Space at least one-half inch away from surrounding objects.

For installation in a Pollution Degree 2 environment (when model # begins with 230C).

### CONNECTIONS

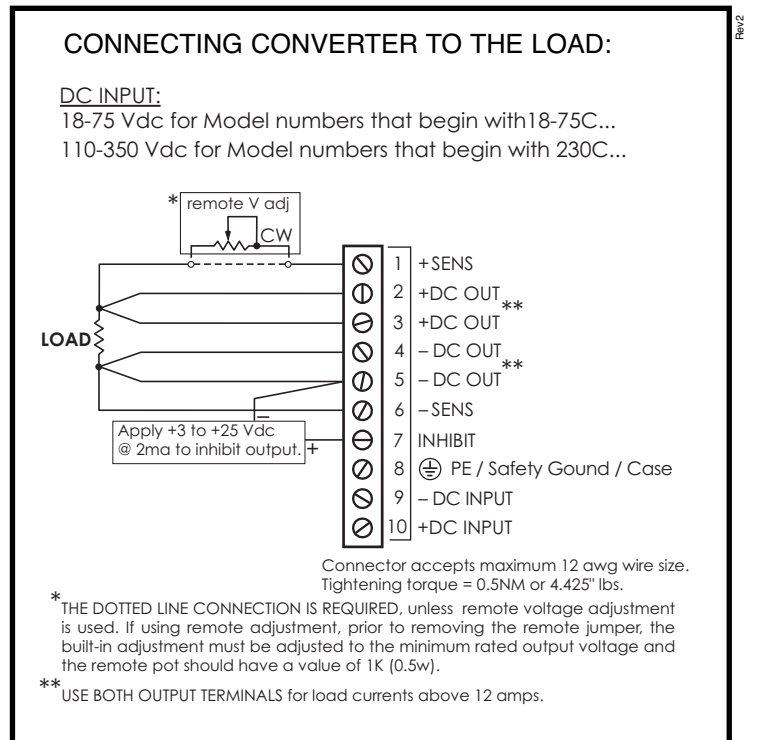
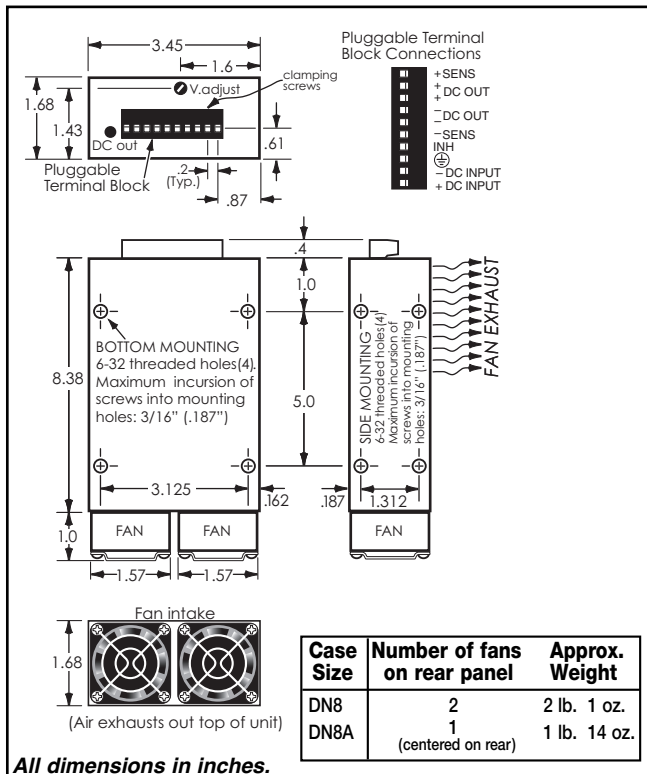
Make all connections before applying DC input power.

THE SENSING TERMINALS MUST BE CONNECTED to the output terminals, either at the output terminals of the converter or at the load. Failure to have the sense terminals connected will affect the output voltage (usually causing it to be higher than the rating of the converter, and unadjustable), or may result in the overvoltage protection circuit momentarily shutting 'off' the output. If voltage drops in the output voltage leads (which degrade regulation) are not objectionable, local sensing can be used; leave in place the jumpers provided with the converter (connecting the +S (sense) to the +OUT and the -S (sense) to the -OUT). However, if the best possible regulation at the load is required, then remove the jumpers and use two lighter gauge leads to connect the sense terminals to the output leads at the load, as shown in the schematic. This configuration permits the converter to sense and compensate the voltage actually across the load. Note that remote sensing is capable of compensating only limited wiring drops. The voltage across the load, plus the voltage drops through the wiring, must be within the output voltage range of the converter for the voltage at the load to remain within the load regulation specification. Therefore, the wire gauge used for the output lines **MUST BE LARGE ENOUGH** to assure that their combined voltage drops will not exceed the difference between the maximum output voltage of the converter and the voltage to be maintained across the load.

For remote voltage control, set the internal voltage control to the minimum output voltage (fully counter clock-wise), remove the +S (sense) jumper and connect a 1K potentiometer (0.5 watt) between the +S (sense) and the +OUT terminals. The output voltage is directly related to the remote voltage control resistance. Use a high quality Cermet or composition potentiometer for the best output stability.

The converter's output may be inhibited by applying between +3 to +25 Vdc (relative to the -OUT terminal) to the Inhibit terminal.

In electrically noisy environments it may be necessary to use shielded wire for remote voltage control and remote sensing. Connect the shields to the ground terminal on the terminal strip. Usually, the lowest level of output noise results when the load ends of the shield are *not* connected. Noise can be reduced in some applications with the use of a capacitor connected across the sense lines at the converter; and in other applications, when one is connected across the load. A 0.1 mfd (100 WVdc) capacitor with good high frequency characteristics (such as Mylar types) is appropriate. Do not use a capacitor unless necessary.



The complete Acopian catalog is available on the Internet at [www.acopian.com](http://www.acopian.com)  
 P.O. Box 638, Easton, PA 18044 • Phone: (610) 258-5441 • FAX: (610) 258-2842

**ALL ACOPIAN  
 POWER SUPPLIES  
 MADE IN U.S.A.**



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### OPERATION

These converters operate as constant voltage sources when used at load currents equal to or less than their ratings. If a converter is overloaded, the current limit circuit will automatically reduce the output voltage until the overload is removed, and will then recover. Under high overload or shorted conditions, the green 'DC out' Indicator is not on.

A higher than normal output voltage (even if momentary, as when caused by a transient induced into the output wiring) will result in the overvoltage protection circuit latching the output OFF. To reset the output, interrupt the DC input power for 20 seconds.

If there is any possibility of voltage from another source (another converter, a battery, transients, etc) being applied to the converter's output terminals, protect the converter by using a diode in series with either the +OUT or the -OUT.

Do not attempt to directly parallel the outputs of two converters. This would result in current flowing from the higher-set output into the lower-set output, and probable damage to both circuits. Outputs may be connected in series to obtain a higher voltage provided that a reverse-biased diode, having PIV and current ratings exceeding the combined output, is used across each output; however, keep in mind that the output current to be drawn cannot exceed the output current rating of the lowest rated converter used.

These converters have internal DC line noise filtering. If the DC input power contains large voltage spikes ('noise') induced by the switching of high currents, inductive loads, electro-mechanical components, etc., the input power leads to the converter should include some means of transient suppression. Otherwise, a portion of the noise may be coupled through the converter to the load. Also, the converter could be damaged.

### TROUBLE ANALYSIS

Whenever an operating problem is experienced, systematically check for external causes first, including all fuses, primary power lines, external circuit elements, and external wiring. Failures and malfunctions often can be traced to simple causes such as improper wiring or connections. Lack of output may result from no DC input voltage or voltage too low, tripped overvoltage protection, presence of an inhibit signal, a blown fuse, thermal shutdown (self-resetting) or a damaged converter.

**For 18 to 75 Vdc input models (model # begins with 18-75C...): The +DC input line must include a 15 amp time-delay fuse.**

**For 110 to 350 Vdc input models (model # begins with 230C...):**

**CAUTION:** For continued protection against risk of fire, replace internal fuse with same type and rating of UL Listed fuse (F1; 6.3 amps, 400Vdc 5x20mm).

**UL508 FILE: E306586**

**UL60950 FILE: E208800**

#### ***Applies to CE-certified models:***

##### **CE Marked To:**

Directive 2011/65/EU (ROHS Recast)  
Directive 2006/95/EC (Low Voltage Directive)  
Regulation (EC) No 1907/2006 (REACH)

##### **SPECIAL MEASURES AND LIMITATIONS**

*To maintain compliance with the Low Voltage Directive, the following special measures and limitations must be observed when the product is placed into service:*

- Evaluated for use in Pollution Degree 2 environment.
- Intended for connection to Class 1, TN-S power system.
- Models with outputs of 36 volts or less are considered to have SELV outputs.
- Models with outputs greater than 36 volts are considered to have hazardous voltage outputs and should not be located in an Operator Access area in the end product.
- Models with output ratings less than 240VA are considered to have non-hazardous energy levels. Models with output ratings of 240VA or greater are considered to have hazardous energy levels.
- Models without a built-in fuse require an external fuse to be used in the ungrounded (hot) side of the AC line.
- See catalog for electrical and mechanical specifications.
- Ground terminal must be bonded to protective earth.
- Intended to be installed within end-use equipment.