DC-DC CONVERTERS - NARROW PROFILE (DN6)

Acopian DC-DC converters are high performance units that include short circuit and overvoltage 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 may result in damage to the converter.

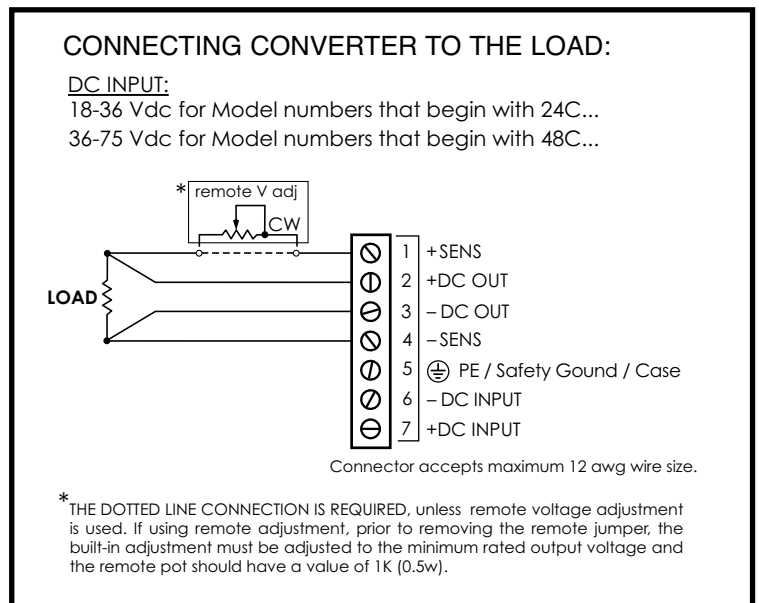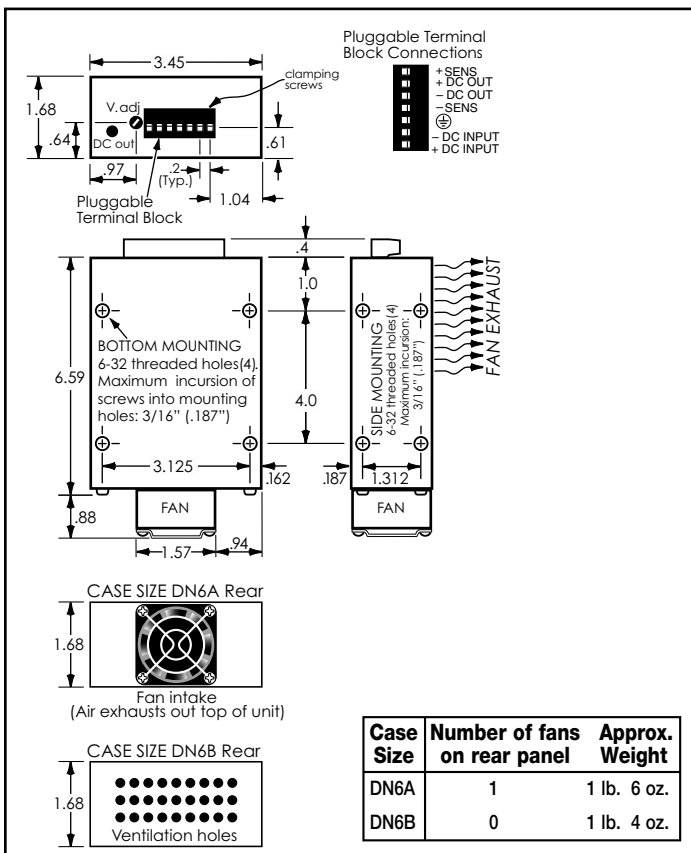Space at least one-half inch away from surrounding objects.

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 +DC OUT and the -S (sense) to the -DC 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 +DC OUT terminal. 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.

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.

CONNECTING CONVERTER TO THE LOAD:

DC INPUT:
18-36 Vdc for Model numbers that begin with 24C...
36-75 Vdc for Model numbers that begin with 48C...

1	+SENS
2	+DC OUT
3	– DC OUT
4	– SENS
5	⏚ PE / Safety Gound / Case
6	– DC INPUT
7	+DC INPUT

Connector accepts maximum 12 awg wire size.

*THE DOTTED LINE CONNECTION IS REQUIRED, unless remote voltage adjustment is used. If using remote adjustment, prior to removing the remote jumper, the built-in adjustment must be adjusted to the minimum rated output voltage and the remote pot should have a value of 1K (0.5w).

Case Size	Number of fans on rear panel	Approx. Weight
DN6A	1	1 lb. 6 oz.
DN6B	0	1 lb. 4 oz.

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

OPERATION

These converters operate as constant voltage sources when used at load currents equal to or less than their ratings. If 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 momentarily shutting 'off' the output. The output will then automatically recover.

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 it by using a diode in series with either the +DC OUT or the -DC 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 36 Vdc input models in DN6A case size, the +DC input line must include a 10 amp time-delay fuse.
For all other models, the +DC input line must include a 5 amp time-delay fuse.

Rev1