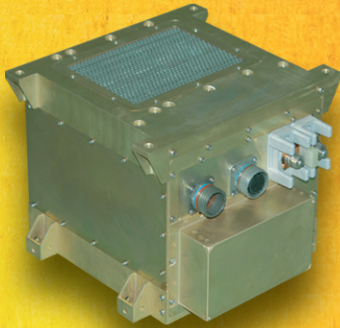


CV01-6DC-1

## 3 Phase 115 Vac to 28 Vdc Regulated Converter Unit



The IPS Model CV01-6DC-1 Regulated Converter Unit (RCU) is a 6 kW AC/DC converter/controller, which converts a 115/200 Vac, 360-457 Hz, 3-phase Wye input to a 28 Vdc output. Designed as a direct replacement for the Voltage Regulated Transformer Rectifiers (VRTR) on the V-22 Osprey tiltrotor aircraft, the shipset consists of three units, each unit communicating with the other two RCUs to control electrical power distribution and bus loading. Significant reductions in weight, cost, and lower power dissipation are achieved by using innovative power system design techniques. Three plug-in power modules (PM) operating in parallel and sharing the load equally allow for a scaleable application and improved maintainability.

The RCU 3-phase input is filtered, rectified, and then supplied to the PMs. The RCU contains 3 PMs, each containing two power sections operating in parallel. A full PWM-controlled H-bridge operating at 200 kHz drives the output of each section. A soft-switching technique utilizing a zero voltage turn-on and zero current turn-off switch control enables high frequency operation without the penalty of high switching losses. The high switching frequency improves power quality, and reduces size and weight.

Each section has its own input and output filters comprised of common mode and differential mode sections. Local control circuitry in each PM senses the current of the two power sections and uses it for pulse-by-pulse current limiting, and for measurement of the module's output current. A common power controller provides the PMs with individual PWM control signals. The PMs then provide the controller with individual output current signals, which are used by the controller to protect against an overcurrent condition. All PM outputs are paralleled and filtered before they are available at the output terminals.

The Control and Protection Module controls the triple redundant system. All operating functions are coded in VHDL and implemented in an FPGA, whose program can be changed as the application dictates. The FPGA monitors Input voltage and current, output POR, and RCU temperature to control solid-state bus contactor drive channels. Discrete outputs annunciate RCU conditions to external equipment. A serial interface interconnects the triple-redundant system so that each individual RCU knows the status of the other two RCUs and their associated external bus contactors.

### Specification

Input	115/200 Vac, 360-457 Hz, 3-phase Wye
Output	29 Vdc, 300 A
Weight	25.7 lbs
Size	8.5" x 9" x 8.2"
Efficiency	87.7%
Cooling Type	Air
Temperature	-40 °C to +85 °C
Altitude	40,000 ft
Protection	OV, UV, OC, OT
BIT	PBIT & CBIT
Power Quality	MIL-STD-704E
EMI	MIL-STD-461E
Environmental	MIL-STD-810F



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