

Application Guide to MDI Full-Featured Converters

This application guide offers application information and technical insight on the MDI family of full featured hybrid DC-DC Converters. Hybrid DC-DC Converters offer the advantages of size, weight and performance when compared to discrete or surface mount units. This application note discusses the operation and use of full featured hybrid DC-DC Converters. These parts are currently available in four input voltage ranges. For nominal 28 VDC systems, in order of increasing power levels, the parts are designated Models 2690, 3107, 2680, 3193 and 3031. These parts are also available with "Inhibit Not" as Models 6690, 6107, 6680, 6193 and 6031. For nominal 120 VDC systems, in order of increasing power levels, the parts are designated Models 3070, 3108, 3060, 3326 and 3051. For nominal 270 VDC systems, in order of increasing power levels, the parts are designated Models 3020, 3109, 3000, 3327 and 3041. For nominal low voltage 8 to 40 VDC systems, in order of increasing power levels, the full featured parts are designated Models 3062, 3113, 3063 and 3114.

For space applications requiring radiation hardness, MDI offers the proton hard series. For 28 V nominal systems, the parts are designated 5690, 5107, 5680, 5193 and 5031. For 50 V nominal systems, the parts are designated 7690, 7107, 7680, 7193 and 7031. For 70 V nominal systems, the parts are designated 8690, 8107, 8680, 8193 and 8031. For 100 V nominal systems, the parts are designated 9690, 9107, 9680, 9193 and 9031.

The inherent advantages of hybrid switched-mode converters make them a logical solution for use in many applications including spacecraft, aircraft, missiles and undersea systems. Some of these advantages include small size and weight, hermetic sealing for environmental resistance, excellent DC and high frequency isolation, ease in heatsinking the single converter as compared to multiple power components, better control of EMI and output ripple and higher reliability.

The full featured connotation by MDI implies the inclusion of many useful functions that were previously not available in hybrid converters. The most important feature is the addition of a complete self contained EMI filter, allowing these units to meet MIL-STD-461 levels. Additional features include output common mode filtering, programmable soft start, open loop OVP protection, external synchronization inputs and an inhibit input.