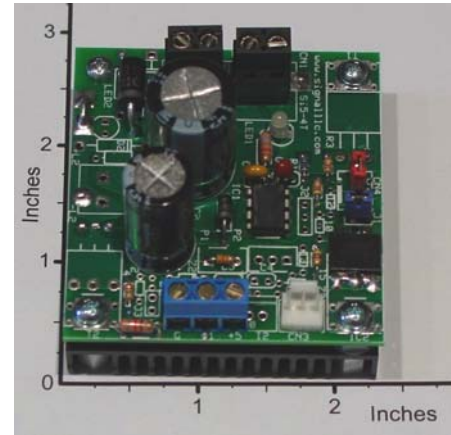




Si5HyUdMCAF1-30V-20A, Single, 30V 20A, Closed-Loop, Hybrid, Unidirectional, Motor Controller with an Integrated Heat Sink, Analog Feedback Port and with 5kHz or 20kHz PWM, T-Chip

The **Si5HyUdMCAF1-30V-20A** is a 30V 20A, microprocessor based, Single, Hybrid, Closed-Loop, Unidirectional, Motor-Controller board with an Integrated Heat Sink and with an Analog Feedback Port. This board uses pulse-width modulation (**PWM**) to efficiently control the speed of a brush type DC motor (or load current) in open or closed loop control mode in the 0 to 600W power range, and in 5W steps. An onboard microprocessor generates a 5kHz or 20kHz **PWM** carrier signal, regulates the motor speed, controls motor the acceleration/deceleration, and monitors the sensor inputs. The **PWM** carrier frequency is user selectable by the jumper **CN4**, 20kHz when **CN4** is open and 5kHz when short. The high frequency PWM rate provides a smooth motor-speed control, and insures a quiet motor environment. As the name hybrid (**Hy**) implies, the desired motor speed (or PWM pulse-duration) is set by a variable analog input-voltage $V_{I1,G}$ (0 to +5V, applied to pin **I1** relative to pin **G**, on port **CN4**) providing a smooth motor-speed control from 0 to 100% in 0.833% steps while the other control signals are digital. The user can choose between open-loop or closed-loop modes by short-circuiting or open-circuiting the pins labeled **J1M**. An open-circuit (no jumper) selects the open-loop mode, while short-circuit (jumper installed) selects the closed-loop mode. In closed-loop mode, the external analog voltage $V_{F,G}$ (0 to 5V, applied to pin **F** relative to pin **G** on port **CN3**) provides the feedback, keeping the motor-shaft rotating at a constant speed. These two analog input pins (**I1**, **F**) are zener-diode protected. An onboard LED (red) is used to monitor the load-voltage. A small (2.3"x2.4"x0.45") finned integrated heat sink is included with mounting hardware (as shown on the photograph) to operate at 20A or 600W power levels. Higher power-levels (30V, 30A or 900W) can be achieved with more efficient heat-sinks. Please click on this link and read the [Board Mounting Instructions and Heat Sink Selection Guide](#). This board requires a single 9V to 30V DC power source (unregulated and unfiltered) at a 0A to 20A current range to operate normally. Typical applications are: DC Motor-Speed Controller, Light-Dimmer with variable delay, Power Amplifier, SPST Solid State Relay, etc. This board can be configured and programmed to perform efficiently in many customized applications.



Specification and Application for Si5HyUdMCAF1-30V-20A

- **Typical Operating Temperature at 20A:** 45⁰C with the Metal Heat-Ring Bolted to a small (2.3"x2.4"x0.45") finned Aluminum Heat-Sink, while exposed to air at 25⁰C (as shown on the photograph).
- **Source-Voltage Requirement (V_P , from pin +P to pin -P):** Any DC voltage from 9V to 30V, unregulated DC.
- **Average Load-Voltage:** Linearly variable from 0 to V_P in 0.83% steps, using $V_{I1,G}$ as control input.
- **Max. Continuous Average Load-Current:** 20A at 100% duty-cycle, with heat-sink (as shown).
- **Max. Load-Current for 5sec:** 40A at 100% duty-cycle, with heat-sink (as shown).
- **Load Isolation:** The Load or Motor must be isolated from the source voltage (V_P).
- **Power-Conversion Efficiency:** Approximately 97.5% at full-load (30V and 20A).
- **PWM Switching Frequency:** 5kHz when **CN4** short and 20kHz when **CN4** open.

