

How to Use the KBAP-240D as Overload and Field Loss Protection

This technical note is to advise you of two ways that the KBAP overload protection board can be used. The first application is regarding the KBAP-240D being used to protect a Shunt Wound motor in case of field loss. The KBAP is used to monitor motor armature current, using either internal or external sensing. Since the armature will draw substantial current if the shunt field were to lose power, the KBAP can be used to sense this increased current draw, it would then turn the control off by shorting the Inhibit terminals. Therefore, the motor and control would be protected in the event of field loss.

The next application is regarding using the KBAP to provide overload protection for multiple motors being used on a single speed control. Multiple motors can be used as long as the sum of their full load currents does not exceed the full load rating of the control. As an example, a KBMM-125 with auxiliary heatsink, rated for 16 amps maximum output, can be used to control up to six 1/4 Hp, 90VDC, 2.5 Amp motors. A serious issue with this application is that there is no individual current limiting protection for any of these motors. In other words, if a motor stalls, it would have to draw up to 24 Amps DC before the drive's current limit circuit would activate. That would far exceed the capacity of the motor, causing it to burn out very quickly. If a KBAP were used in series with each motor's armature circuit, then the KBAP would act as the current sensing circuit to protect each motor from overload. An overload in any one motor could cause the drive to shut down. If the KBAP were set for manual reset, you would be able to tell which motor had caused the drive shutdown.

Another issue with this application is that load regulation will suffer. A 1-1/2 HP Plug-In Horsepower® Resistor would be required (six 1/4 HP = 1-1/2 Hp) which would provide less IR Comp range than required for a 1/4 HP motor. However, for applications where there is minimal load variation or where load regulation is not critical, the IR Comp would not be a factor.

If you have any questions regarding this technical note, please feel free to contact us.

Sincerely yours,

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