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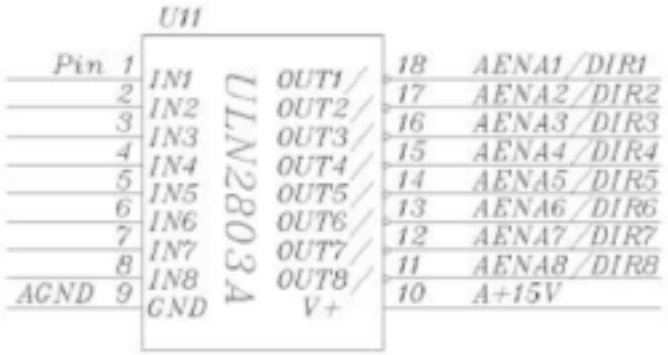
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Setup for PMAC PC

24V sourcing/sinking amplifier enable and 24V flag configuration

Amplifier Enable Output

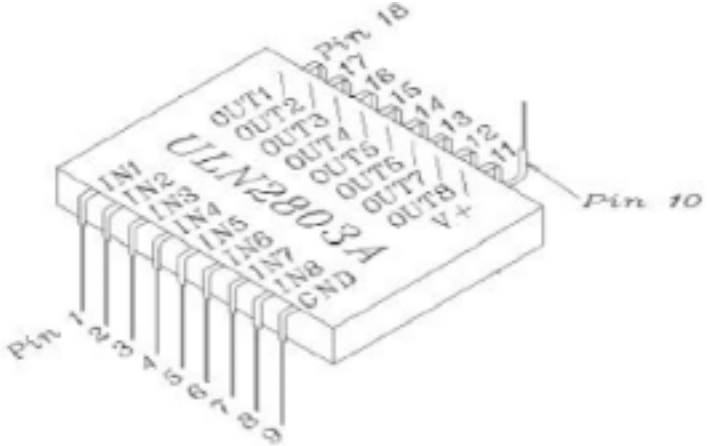
With proper configuration, PMAC PC is able to provide either open-emitter (sourcing) or open-collector (sinking) outputs for the amplifier enable circuit. The default configuration utilizes an open-collector driver (ULN2803A) powered direclty from the PMAC board. This configuration is suited for most applications and is shown below.



ULN2803A Open Collector IC

24V Sinking Amp Enable Outputs

The ULN2803A amp-enable ICs are rated to 100mA and 24V: internal diode protection circuits in the IC limit the high voltage of the output to the analog positive supply voltage, usually +15V. In order to defeat this protection and allow the sinking outputs to be pulled to 24V, remove the IC from location U11 on the PMAC PC board. The positive supply voltage for the IC, pin 10, must be bent backward so that when the IC is fitted back into its socket, pin 10 is exposed. This pin should be left unconnected. The common from the 24V source must reference PMAC PC's analog ground plane. Pin 58 at either JMACH7 or JMACH8 can be used for this purpose. If using Acc-8D, terminal 58 provides easy connection for this purpose.

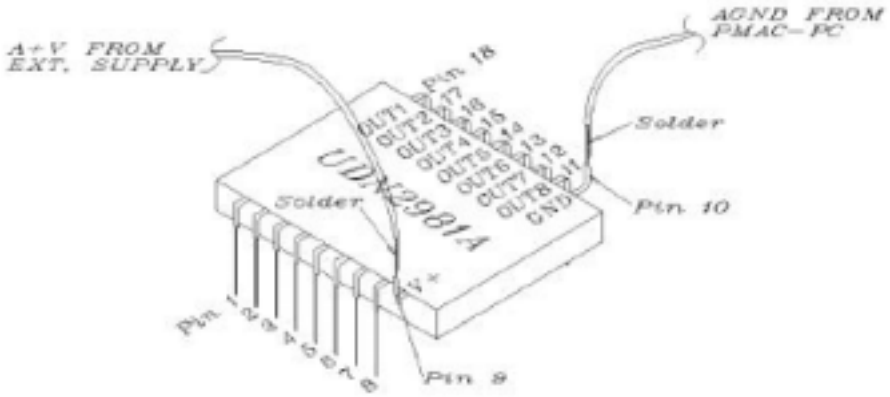


Modified ULN2803A IC For 24V Sinking Outputs

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Sourcing Amp Enable Outputs

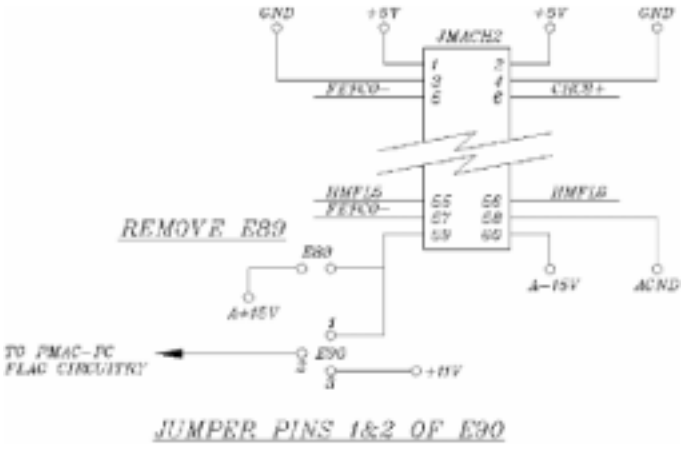
The PMAC PC can also be modified to allow open-emitter (sourcing) amplifier enable outputs. The modification procedure is similar to that discussed above for the 24V sinking amp enable outputs. The open-collector ULN2803A IC must be replaced with an openemitter UDN2981A IC driver. This IC can be purchased from an electronics supply company. The A+V and GND inputs for the sourcing UDN2981A IC are reversed relative to the ULN2803A sinking IC. Pin 9 and 10 must be bent back as shown so that an external power supply can be used to power the UDN2981A. Pin 9 should be connected to A+V from the external supply. Pin 10 should be connected to the negative from the power supply as well as referenced to PMAC PC's AGND circuit.



Modified UDN2981A IC For Sourcing Outputs

Configuring Flags for 24V

Each channel of PMAC has four dedicated digital inputs on the machine connector (JMACH1 and JMACH2): +LIMn, - LIMn (overtravel limits), HMFLn (home flag), and FAULTn (amplifier fault). Typically, these inputs are assigned to a motor as a set for dedicated use as flags by addressing them with the motor I-variable Ix25. All flag inputs must be shorted to the zero-volt reference voltage for the circuit, allowing current to flow through the LEDs in the opto-isolator, in order to be considered in a zero state. The voltage circuit can be configured in various ways utilizing PMAC PC jumpers E89 and E90 (see the Hardware Reference manual). The current flow to zero volts must be broken to put the flag in its 1 state; no external pull-up resistor is required. For an electronic switch, usually an open-collector output is used. To use a power supply other than the analog +15V from pin 59 on JMACH1, or the +12V from the PC bus, remove E89 and connect pins 1 and 2 of E90. An external +V supply can then be brought in through pin 59 of JMACH2. The negative must be reference to PMAC AGND. This can be done at pin 58 of JMACH1 or JMACH2. If using a PMAC PC 4-axis and do not have a JMACH2 connector, then the external +V can be brought in to pin 2 of E90 directly (no jumper used), referencing the negative to AGND as before.



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