Application Note AN151: Interfacing Microcontrollers to EMCO Supplies

Overview

BiPOM's microcontroller boards (www.bipom.com) are a set of small size, low-cost, low-power, yet powerful single board computers (SBC's) with applications ranging from industrial, medical, home automation to automotive. MINI-MAX series boards host the most popular microcontrollers today in AVR, PIC, MSP430, 8051, 68XX, ARM7, ARM9 and STAMP series.

EMCO (www.emcohighvoltage.com) designs and manufactures compact and reliable high voltage power supplies for original equipment manufacturers, research laboratories and educational institutions worldwide. Combination of EMCO high voltage power supplies and MINI-MAX Microcontroller boards opens up possibilities for laboratory and testing equipment, scientific experiments, research, embedded data acquisition and many other uses.

Theory of Operation

BiPOM's MINI-MAX/51-F board has 4 channels of 16-bit analog outputs and 8 channels of 22-bit analog inputs. The outputs of MINI-MAX/51-F control the EMCO CA Series high voltage power supplies through the PROGRAMMING INPUT of the EMCO supply. MINI-MAX/51-F monitors the voltage output of the EMCO supply through the VOLTAGE MONITOR output of the EMCO supply. This allows a fully closed loop control and tight voltage accuracy through the software control of microcontroller.

Figure 1 shows the connections of such a system. In this example, MINI-MAX/51-F microcontroller board (based on a Texas Instruments 8051 microcontroller) performs closed loop control of 3 EMCO supplies simultaneously.

Controlling EMCO High Voltage Supplies with MINI-MAX/51-F

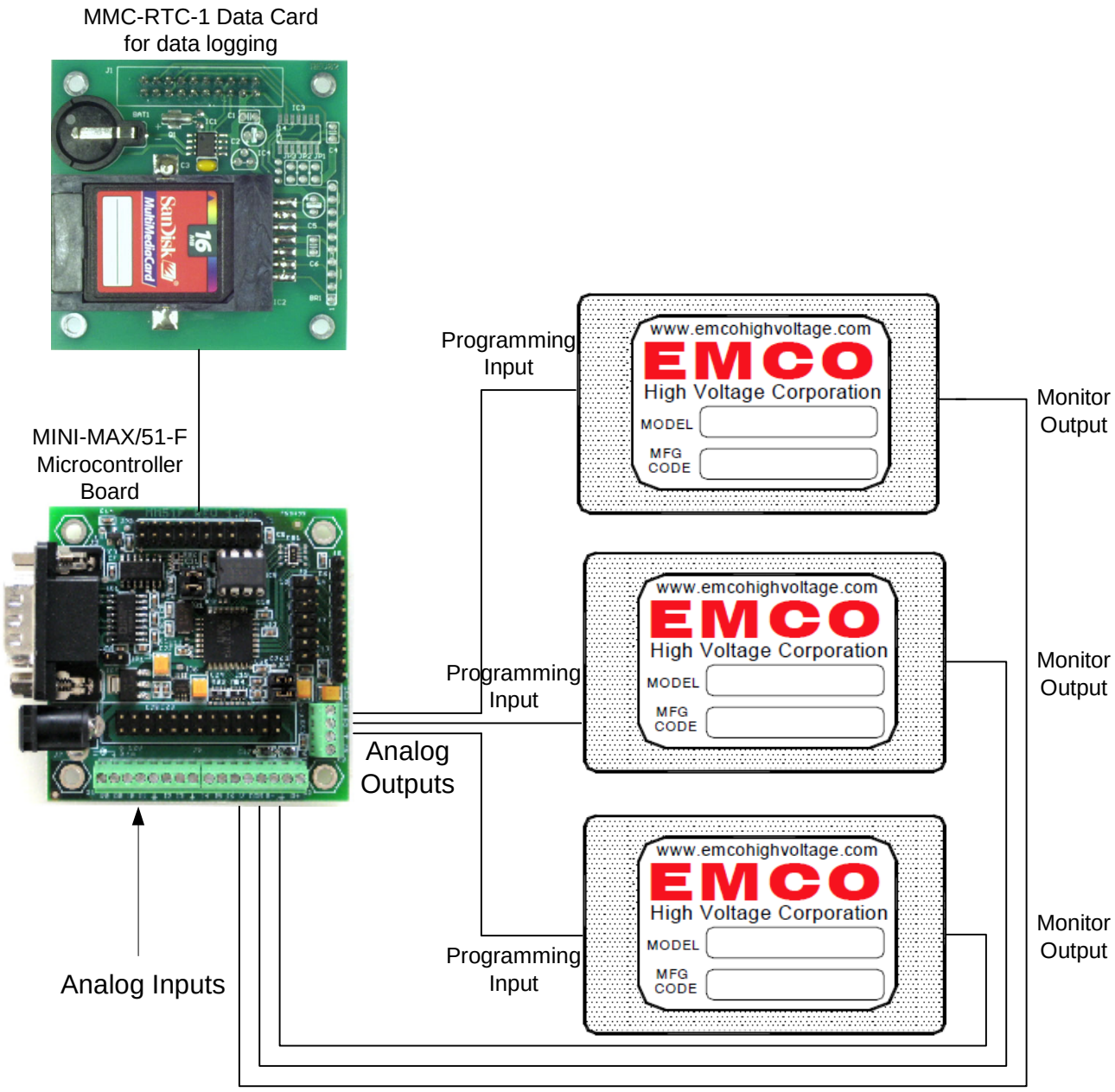

Figure 1