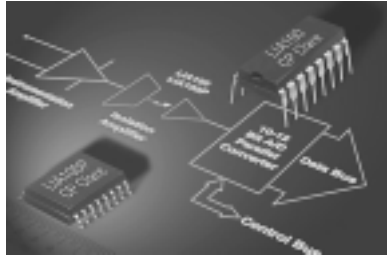


Isolated 0-10V to 4-20mA Converter Application



Industrial controllers and data acquisition equipment frequently require an isolated voltage-to-current loop converter in environments where high common mode noise exist and protection of equipment and personnel from high voltages are required. The current loop, usually 4-20mA, is used to drive control valves or the input to chart recorders for temperature/pressure monitoring over time for example. Figure 1 shows a simplified block diagram of an isolated pressure transmitter.

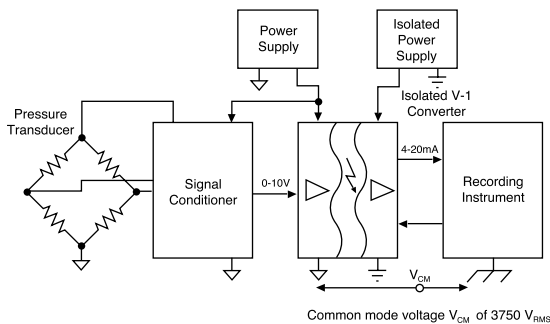


Figure 1. Isolated Pressure Transmitter

The LIA100P, with a typical Common Mode Rejection Ratio of 130dB (see figure 1A) and isolation voltage up to $3750V_{RMS}$ is a good choice for this kind of application.

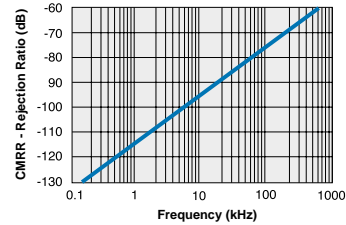


Figure 1A. Common Mode Rejection

The example circuit for this application is shown in figure 1B.

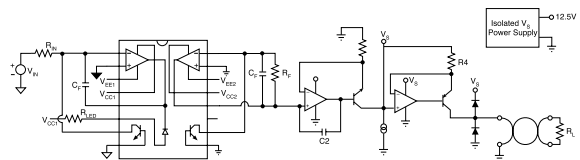


Figure 1B. 0-10V to 4-20mA Converter

The LIA110P is in the photovoltaic mode which has linearity comparable to a 13-14 bit D/A converter with 1 LSB nonlinearity or 0.01% of full scale. The result is a clean, linear conversion from 0-10V to 4-20mA as shown in figure 2.

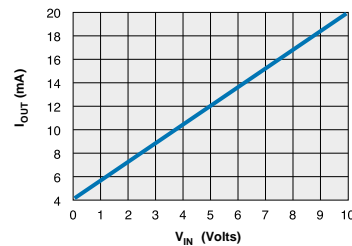


Figure 2.1 $I_{OUT}(mA)$ vs. $V_{IN}(Volts)$