Current Sensing with Different Types of Amplifiers

TI Precision Labs – Current Sense Amplifiers

Quiz
Current sensing w/ diff. types of amplifiers – quiz

1. Direct current sensing usually measures voltage across which circuit element?
   a) Capacitor
   b) Inductor
   c) Resistor
   d) Diode

2. In low-side sensing, the shunt resistor is placed between:
   a) The system load and ground
   b) The bus voltage and system load
   c) The bus voltage and ground
   d) Analog ground and digital ground
Current sensing w/ diff. types of amplifiers – quiz

3. A disadvantage of using op amps for current sensing is:
   a) $V_{CM}$ is limited to $V_S$ of the op amp
   b) Parasitic impedances on the PCB can cause errors
   c) Accuracy may be dominated by external components
   d) All of the above

4. The main advantage of using instrumentation amps for current sensing is:
   a) Low cost
   b) $V_{CM}$ can be larger than the supply voltage $V_S$
   c) The internal feedback network adds extra load to the system
   d) Very low input bias current allows for measuring very small currents
Current sensing w/ diff. types of amplifiers – quiz

5. Which type of amplifier can handle $V_{CM}$ larger than $V_s$?
   a) Op amps
   b) Difference amps
   c) Instrumentation amps
   d) Current sense amps

6. The maximum load current measurable with a current sense amp is:
   a) About 100A
   b) About 10A
   c) About 1A
   d) About 100mA
Answers
Current sensing w/ diff. types of amplifiers – quiz

1. Direct current sensing usually measures voltage across which circuit element?
   a) Capacitor  
   b) Inductor  
   c) Resistor  
   d) Diode

2. In low-side sensing, the shunt resistor is placed between:
   a) The system load and ground  
   b) The bus voltage and system load  
   c) The bus voltage and ground  
   d) Analog ground and digital ground
Current sensing w/ diff. types of amplifiers – quiz

3. A disadvantage of using op amps for current sensing is:
   a) $V_{CM}$ is limited to $V_S$ of the op amp
   b) Parasitic impedances on the PCB can cause errors
   c) Accuracy may be dominated by external components
   d) All of the above

4. The main advantage of using instrumentation amps for current sensing is:
   a) Low cost
   b) $V_{CM}$ can be larger than the supply voltage $V_S$
   c) The internal feedback network adds extra load to the system
   d) Very low input bias current allows for measuring very small currents
Current sensing w/ diff. types of amplifiers – quiz

5. Which type of amplifier can handle $V_{CM}$ larger than $V_S$?
   a) Op amps
   b) Difference amps
   c) Instrumentation amps
   d) Current sense amps

6. The maximum load current measurable with a current sense amp is:
   a) About 100A
   b) About 10A
   c) About 1A
   d) About 100mA