Designing an I/O Power Supply from the Omron NX Bus

In our recent guide, "What is an Omron NX Power Module and Do You Need One?," we discussed what an Omron NX power supply module is and why it is necessary. Here, we'll take a more in depth on how to design and specify the actual power supply needed for a particular system.

First, we'll address a few disclaimers:

- This assumes an additional power supply unit is connected to the right side of the CPU because one or more modules require power from the NX bus.
- The total current needed by the I/O modules on the NX bus cannot, and must not, exceed the total current output of the unit supplying the power.
- The voltage drop of the I/O circuits inside each NX module that get power from the NX bus must be within the specification of the voltage drop in the I/O power supply.

There are 4 Steps to follow in order to design the power supply.

1. **Calculate the total current and voltage drop**. Calculate the total current consumption and voltage drop in each power supply of the NX units connected to the CPU as well as the CPU itself.
2. **Add the voltage and current drops of each module together**. Starting from the left (next to the first I/O Power Supply module), add together the voltage drops and current consumption of each NX module. Omit any module that does not draw power from the NX Bus.
3. **Compare the voltage and current loads to the spec of the I/O Power Supply Unit**. If the addition of an NX module causes the total current consumption of the I/O units to exceed the current or voltage capacity of the additional I/O power supply – then add another I/O power supply unit to the left of the module that put the total over the limit.
4. **Repeat until all modules are accounted for**. Repeat steps 2-4 starting with the first module to the right of the additional I/O Power Supply module. Stop when all modules are accounted for.

For information about designing an I/O power supply or implementing an Omron product into your project, contact a Cross automation expert! As a distributor for Omron our robotics and machine automation group has worked with customers implementing solutions into a range of applications.