

# SUPPORT NOTE

SN-140

## Instrumentation Current Draw

### Introduction

This note provides current draw of each module and compliance of system power supplies for use in determining system limitations, if any, when many instrument modules are required for an application.

Also, the analog ground (AG), or node 0, current is shown. That current is largely a measure of current between the  $\pm 15V$  supplies, but other supplies do contribute. Even a few  $m\Omega$  of AG resistance can turn a few mA of AG current into an appreciable offset, but offset zeroing in the software eliminates the effect.

### Power Supply Current Ratings

Table 1 contains the maximum currents rating for system power supplies as of January 2009. There is no independent 12V supply in modular systems because the 12V supply is created from the +15V one. That is not a problem because modules requiring a 12V supply have been made obsolete, or soon will be.

Power Supply	Current Rating
+5V Modular or Rack	20A
+12V Rack	900mA
$\pm 15V$ Modular or Rack	1.7A
$\pm 120V$ Modular or Rack	715mA

Table 1 – Power Supply Current Ratings

### Instrumentation Current Draw

Table 2 contains the current draw and node 0 current of each instrument. Current draw from the 12V supply is 0A except for the modules that require 12V.

For the CPM and NEM, current draw is listed with all relays open. Closing a relay requires 20mA from the 5V supply. A closed PAM module is one with twelve relays energized. That was selected because unused pins are grounded to meet specifications.

Module	5V	$\pm 15/12V$	AG
2kVM	225+170	22 (422*)	0.5 (400*)
Backplane (mod)	59	-	-
Backplane (rack)	59	-	-
CMM I/F	1208	51/36	-2.7
CMM100k		57	-
CPM	517	-	-
DMM-12	1100	34/61	2.1
DMM-16	395	16	2.0
HISMU	504	214	2.1
HV Box	170	-	-
HVSMU	398	91	54.6
ISM	1075	89/21	-3.1
NEM	482	-	-
NTM	65	-	-
PAM-12 (open)	871	21	-
PAM-12 (closed)	1111	21	-
PAM-16 (open)	871	31	-0.1
PAM-16 (closed)	1111	31	-0.1
PPG	409	0/18	-
PPG4	614	189	3.0
Scanner	-	-	-
SCM	202	10	3.6
QuadVSM	285	58	-
UFM	214	-	-
VF	632	34/29	1.5
VFIF-12	1075	89/41	-3.1
VFIF-16	226	51	0.1
VSM-100mA	169	20	-
VSM-1A	169	20	-

Table 2 – Module Current Draw (mA)

\* Output stage switching regulator takes current from +15V supply during operation, but current only flows while 2kV is output.