

z475  
Remote DC Power Supply  
Preliminary

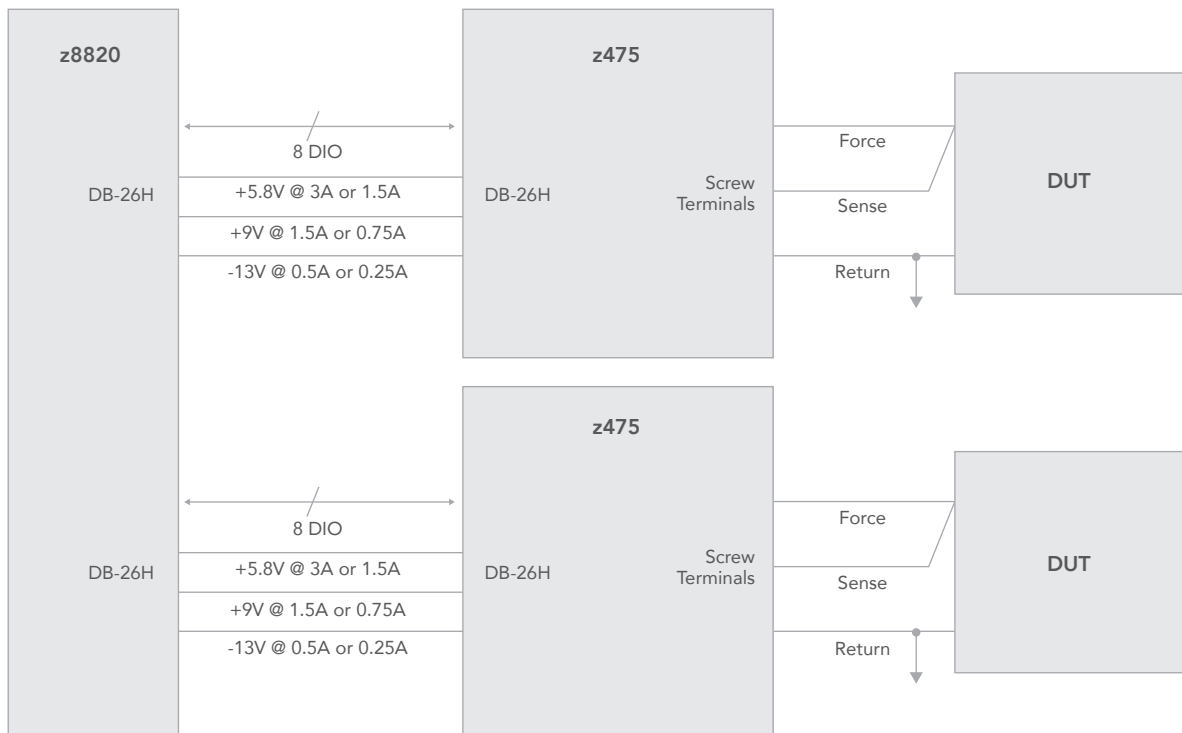


## Overview

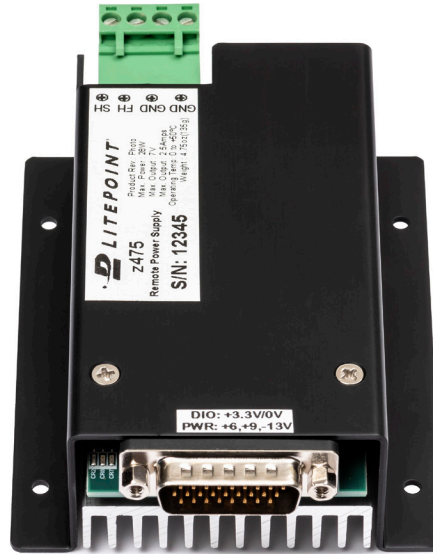
The z475 remote DC Power supply can provide a stable VCC voltage for PA/FEM/SW DUTs in a cabled test setup without the use of capacitors or trackers on the load board. The z475's small footprint allows mounting close to DUT. It has an onboard FPGA to capture current and/or voltage waveforms as well as provide averaging and peak detection.

## Testing Setup

Elements	Description	Notes
z8820	DC Power & DIO Controller PXIe Remote Interface Card	Two DB-26H interfaces
z475	Remote DC Power Supply	



## Port Descriptions



Port	Description
DB-26H	D-sub 26-pin
Screw Terminals	Force, Sense, Return

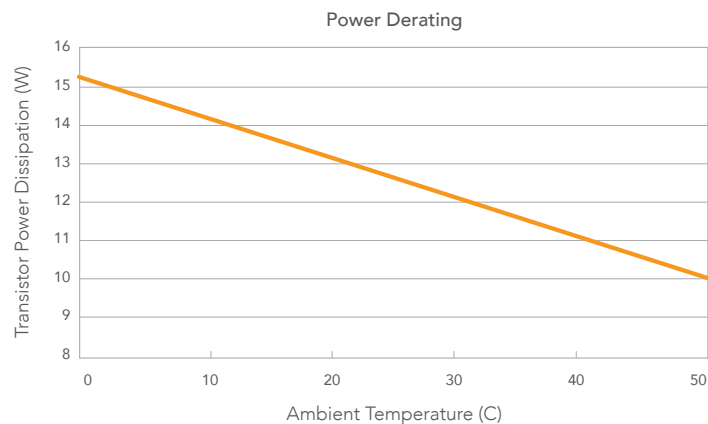
## Electrical Specifications (General)

Specification	Value
Channels	1
Test points	Voltage/Current/Spare 3.3V CMOS I/O
Voltage range	0 V-7.5 V
Voltage resolution	115 $\mu$ V
Voltage sense range	7.5 V
Voltage sense resolution	1.83 mV
Maximum current, per z8820 one z475 or shared between two z475s	2 A
Current ranges	3 A, 500 mA, 50 mA, 5 mA, 500 $\mu$ A, 50 $\mu$ A
Waveform capture	Up to 800 kSPS, up to 64 kS memory depth
Max Power / Cooling	28 W *Dependent upon operating conditions. See table below to estimate z475 power dissipation

## Transistor Power Dissipation Operating Off of 9V Rail (Default)

Transistor Power Dissipation (W)	Current (A)											
	0.25	0.5	0.75	1	1.25	1.5	1.75	2	2.25	2.5	2.75	3
0.5	2.125	4.25	6.375	8.5	10.625	12.75	14.875	17	19.125	21.25	23.375	25.5
1	2	4	6	8	10	12	14	16	18	20	22	24
1.5	1.875	3.75	5.625	7.5	9.375	11.25	13.125	15	16.875	18.75	20.625	22.5
2	1.75	3.5	5.25	7	8.75	10.5	12.25	14	15.75	17.5	19.25	21
2.5	1.625	3.25	4.875	6.5	8.125	9.75	11.375	13	14.625	16.25	17.875	19.5
3	1.5	3	4.5	6	7.5	9	10.5	12	13.5	15	16.5	18
3.5	1.375	2.75	4.125	5.5	6.875	8.25	9.625	11	12.375	13.75	15.125	16.5
4	1.25	2.5	3.75	5	6.25	7.5	8.75	10	11.25	12.5	13.75	15
4.5	1.125	2.25	3.375	4.5	5.625	6.75	7.875	9	10.125	11.25	12.375	13.5
5	1	2	3	4	5	6	7	8	9	10	11	12
5.5	0.875	1.75	2.625	3.5	4.375	5.25	6.125	7	7.875	8.75	9.625	10.5
6	0.75	1.5	2.25	3	3.75	4.5	5.25	6	6.75	7.5	8.25	9
6.5	0.625	1.25	1.875	2.5	3.125	3.75	4.375	5	5.625	6.25	6.875	7.5
7	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
7.5	0.375	0.75	1.125	1.5	1.875	2.25	2.625	3	3.375	3.75	4.125	4.5

## z475 Transistor Power Dissipation Derating



## Voltage Output Specifications

Range	Resolution	Accuracy <sup>1</sup>	Temperature Drift
0V – 7V	1 mV	± 500 µV from 0-6 V ± 3 mV above 6 V	8.12 µV/C

## Voltage Measurement Specifications

Range	Resolution	Accuracy <sup>1</sup>	Temperature Drift
0V – 7.5V	1.83 mV	± 3 mV	4.13 µV/C

## Current Measurement

Range	Resolution	0.1-10 Hz Noise <sup>1</sup>	Accuracy <sup>1</sup>	Temperature Drift
3 A	77 µA	20 µA p-p	± 150 µA	-4.55 µA/C
500 mA	7.7 µA	20 µA p-p	± 30 µA ± 150 µA Max <sup>2</sup>	-4.55 µA/C
50 mA	770 nA	20 µA p-p	± 10 µA ± 150 µA Max <sup>2</sup>	-4.55 µA/C
5 mA	77 nA	20 nA p-p	± 500 nA ± 35 µA Max <sup>3</sup>	9 nA/C
500 µA	7.7 nA	20 nA p-p	± 50 nA ± 35 µA Max <sup>3</sup>	9 nA/C
50 µA	770 pA	20 nA p-p	± 40 nA ± 35 µA Max <sup>3</sup>	9 nA/C

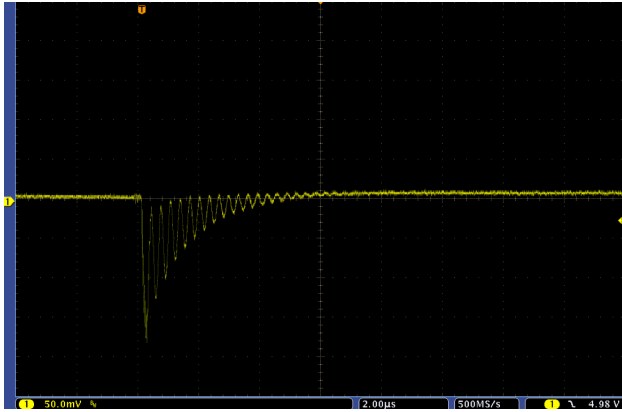
## Voltage Transient Response

Specification	Value	
Settling time	5 µS	200 mV droop settles to 10 mV 0.01 uF load cap, 5 V, 0.5 A
	10 µS	100 mV droop settles to 10 mV 4.7uF load cap, 5V, 0.5A

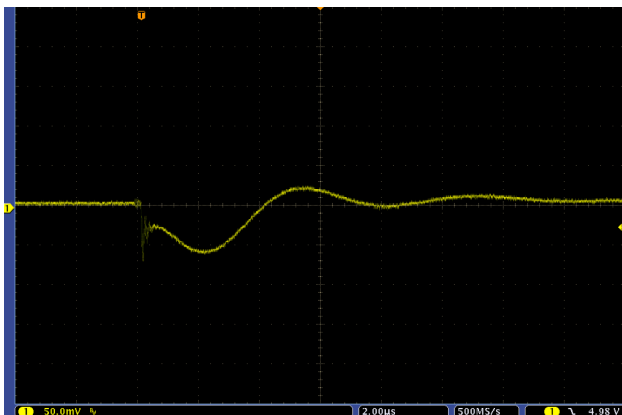
1 Specifications are for 25° C ambient temperature, and 64ms aperture window  
 2 Current Accuracy when operating between 5.2V to 5.3V in 3 wire mode ±150 µA  
 3 Current Accuracy when operating between 5.2V to 5.3V in 3 wire mode ±35 µA

## Voltage Transient Response

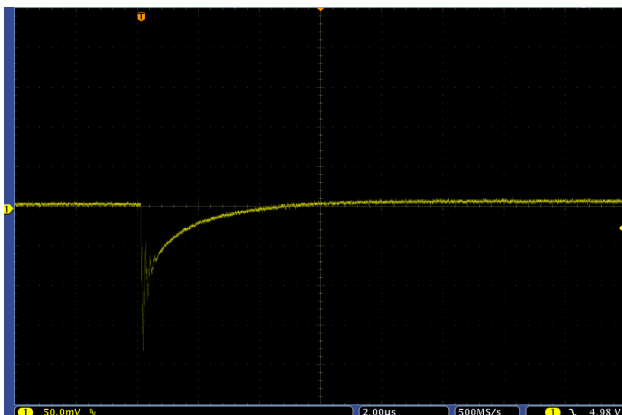
### Turn On Transient



5 V 0.5 A Load with 0.01  $\mu\text{F}$  capacitor  
Max Droop: 200 mV  
Setting time: 5  $\mu\text{s}$

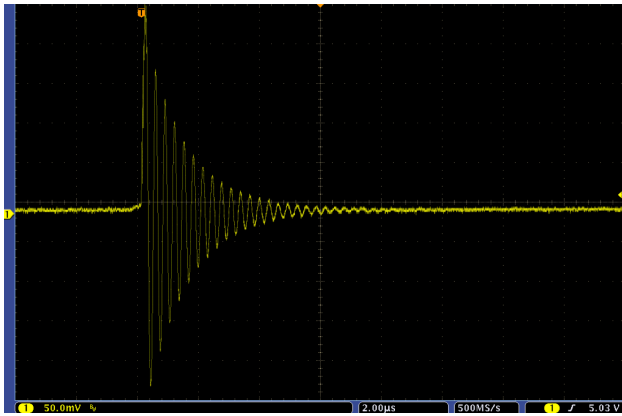


5 V 0.5 A Load with 3.3  $\mu\text{F}$  capacitor  
Max Droop: 80 mV  
Setting time: 7.5  $\mu\text{s}$



5 V 0.5 A Load, No Capacitor  
Max Droop: 200 mV  
Setting time: 3.5  $\mu\text{s}$

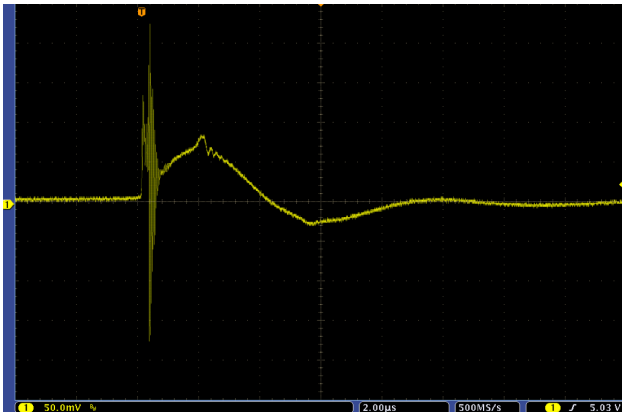
## Turn Off Transient



5 V 0.5 A Load with 0.01  $\mu\text{F}$  capacitor

Max Overshoot: 250 mV

Over Volt Duration: 4  $\mu\text{s}$

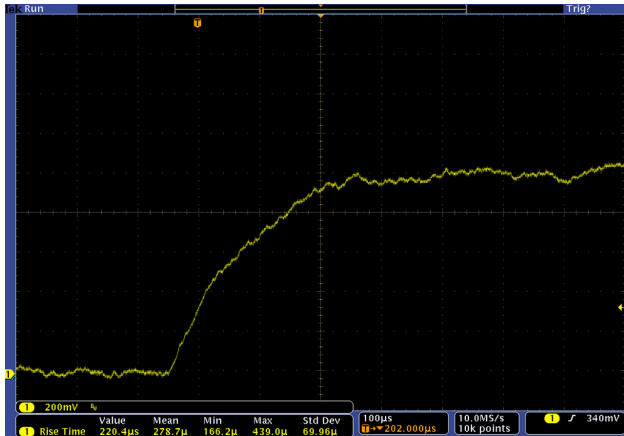
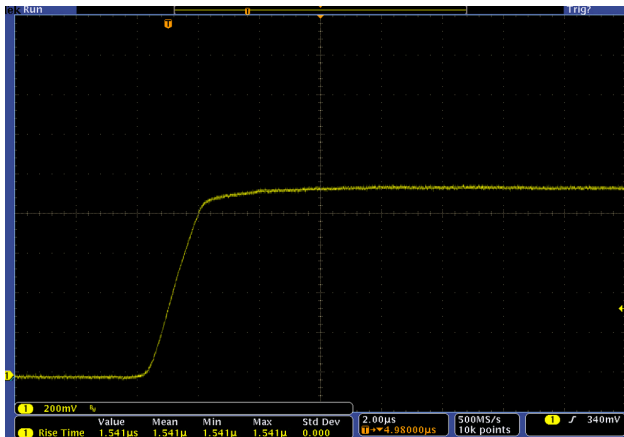


5 V 0.5 A Load 3.3  $\mu\text{F}$  capacitor

Max Overshoot: 150 mV

Over Volt Duration: 4  $\mu\text{s}$

# Current Step Response





## Supplemental Electrical

Specification	Value
Triggers Types	Triggered: Rising or falling edge Immediate
Delay	0-819 $\mu$ s
Trigger pulse width	$\geq$ 150 ns
Capture window	1.25 $\mu$ s – 81.92 ms @ 800 kSPS, other sample rates available

## Physical & Environmental

### Size & Weight

Specification	Value
Physical Size	4.39" X 2.09" X 1.30" Remote instrument
Weight	4.4 oz
Operating temperature range	0°C – 50°C
Calibration interval	1 year

### Power Requirements

Voltage	Typical Current	Max Current
+6 V	0.15 A	3.0 A
+9 V	0.06 A	3.0 A
-13 V	0.03 A	0.1 A

---

## Terminology

### Numeric Prefixes

When referring to numeric values, this document will use SI (International System of Units) and IEC (International Electrotechnical Commission) standard prefixes. Prefix definitions are in the following table.

Prefix	Multiplier
n (nano)	$1/(1000 \times 1000 \times 1000)$
$\mu$ (micro)	$1/(1000 \times 1000)$
m (milli)	$1/1000$
k/K (kilo)	1000
M (Mega)	$1000 \times 1000$
G (Giga)	$1000 \times 1000 \times 1000$
Ki (Kibi)	1024
Mi (Mebi)	$1024 \times 1024$
Gi (Gibi)	$1024 \times 1024 \times 1024$

### Differential Outputs

**Single-Ended** is used to refer to the output on either the + or – output pin

**Differential** is used to refer to the output between the + and- output pins

**Vd indicates** Volts differential

**Vppd** indicates Volts peak-to-peak differential

---

## Safety

This product is designed to meet the requirements of the following standard of safety for electrical equipment for measurement, control and laboratory use: EN 61010-1

## Electromagnetic Compatibility

CE Marking EN 61326-1:1997 with A1:1998 and A2:2001 Compliant

FCC Part 15 (Class A) Compliant

## Emissions

EN 55011	Radiated Emissions, ISM Group 1, Class A, distance 10 m, emissions < 1 GHz
EN 55011	Conducted Emissions, Class A, emissions < 30 MHz Immunity
EN 61000-4-2	Electrostatic Discharge (ESD), 4 kV by Contact, 8 kV by Air
EN 61000-4-3	RF Radiated Susceptibility, 10 V/m
EN 61000-4-4	Electrical Fast Transient Burst (EFTB), 2 kV AC Power Lines
EN 61000-4-5	Surge
EN 61000-4-6	Conducted Immunity
EN 61000-4-8	Power Frequency Magnetic Field, 30 A/m
EN 61000-4-11	Voltage Dips and Interrupts

## CE Compliance

This product meets the necessary requirements of applicable European Directives for CE Marking as follows:

73/23/EEC Low Voltage Directive (Safety)

89/336/EEC Electromagnetic Compatibility Directive (EMC)

See Declaration of Conformity for this product for additional regulatory compliance information.

---

Copyright © 2017 LitePoint, A Teradyne Company.

All rights reserved

#### RESTRICTED RIGHTS LEGEND

No part of this document may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, electronic, mechanical, magnetic, optical, chemical, manual, or otherwise, without the prior written permission of LitePoint Corporation.

#### DISCLAIMER

LitePoint Corporation makes no representations or warranties with respect to the contents of this manual or of the associated LitePoint Corporation products, and specifically disclaims any implied warranties of merchantability or fitness for any particular purpose. LitePoint Corporation shall under no circumstances be liable for incidental or consequential damages or related expenses resulting from the use of this product, even if it has been notified of the possibility of such damages.

If you find errors or problems with this documentation, please notify LitePoint Corporation at the address listed below. LitePoint Corporation does not guarantee that this document is error-free. LitePoint Corporation reserves the right to make changes in specifications and other information contained in this document without prior notice.

#### TRADEMARKS

LitePoint and the LitePoint logo are registered trademarks of LitePoint Corporation. z475 is a trademark of LitePoint Corporation. All other trademarks or registered trademarks are owned by their respective owners.

#### CONTACT INFORMATION

LitePoint Corporation  
575 Maude Court  
Sunnyvale, CA 94085-2803  
United States of America

+1.866.363.1911

+1.408.456.5000

#### LITEPOINT TECHNICAL SUPPORT

[www.litepoint.com/support](http://www.litepoint.com/support)

Doc: 1075-0117-001

June 2018 Rev 3