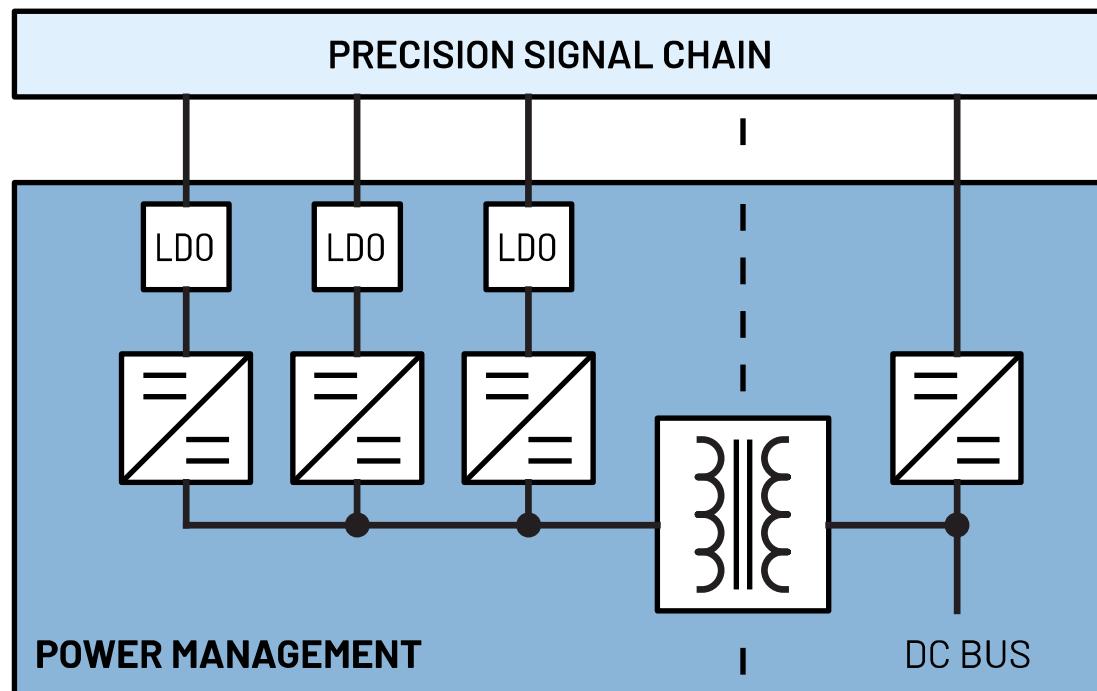


POWER SOLUTIONS FOR PRECISION TECHNOLOGY SIGNAL CHAINS

PRECISION CURRENT SENSING Generic Signal Chains for Current Measurement Shunt: Common-Mode Voltage Level Up to 70V

Rev. 0 | Aug. 2022



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USER GUIDE

GENERIC SIGNAL CHAINS FOR CURRENT MEASUREMENT		SHUNT: COMMON-MODE VOLTAGE LEVEL UP TO 70V	
		Input Voltage	
		<u>5V</u>	
		<u>12V</u>	
		<u>24V</u>	

APPENDIX	<u>Parts Guide</u>
	<u>Power Requirements</u>

This document is interactive. You can click on any underlined text to navigate through the document.

For the table of contents and resources:

		POWER OPTIMIZED	
CURRENT AND VOLTAGE MEASUREMENT	Non-isolated	1-Channel Signal Chain	Left-click the specific signal chain to go through its respective block diagram or power tree.
		4-Channel Signal Chain	
		8-Channel Signal Chain	
	Isolated	1-Channel Signal Chain	
		4-Channel Signal Chain	
		8-Channel Signal Chain	

APPENDIX	Parts Guide
	Power Requirements

Left-click the appendix to go through the list of power devices and other references.

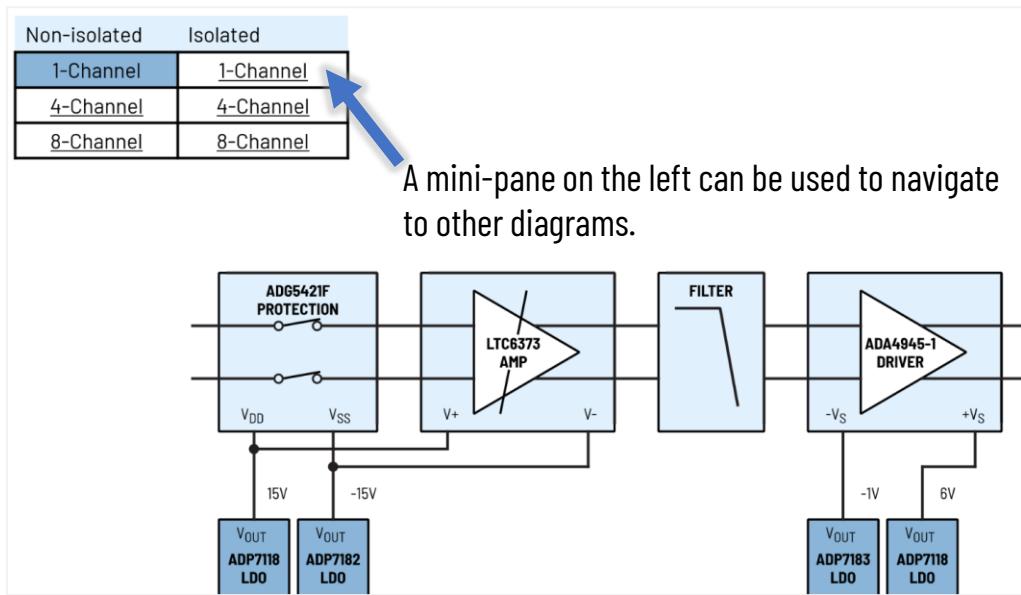
The Power Components are listed on the Appendix, and you may click on the part to go through its product page online.

PART #	DESCRIPTION
LT3471	Dual 1.3A, 1.2MHz Boost/Inverter in 3mm x 3mm DFN
LT8604	High Efficiency 42V/120mA Synchronous Buck
LT8570-1	Boost/SEPIC/Inverting DC/DC Converter with 65V Switch, Soft-Start and Sync.

For the individual pages:

Current and Voltage Measurement
Noise and Bandwidth Optimized

Left-click the subcategory (in this case, **Noise and Bandwidth Optimized**) to return to the Table of Contents.



Precision Current Sensing

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Generic Signal Chain for Current Measurement

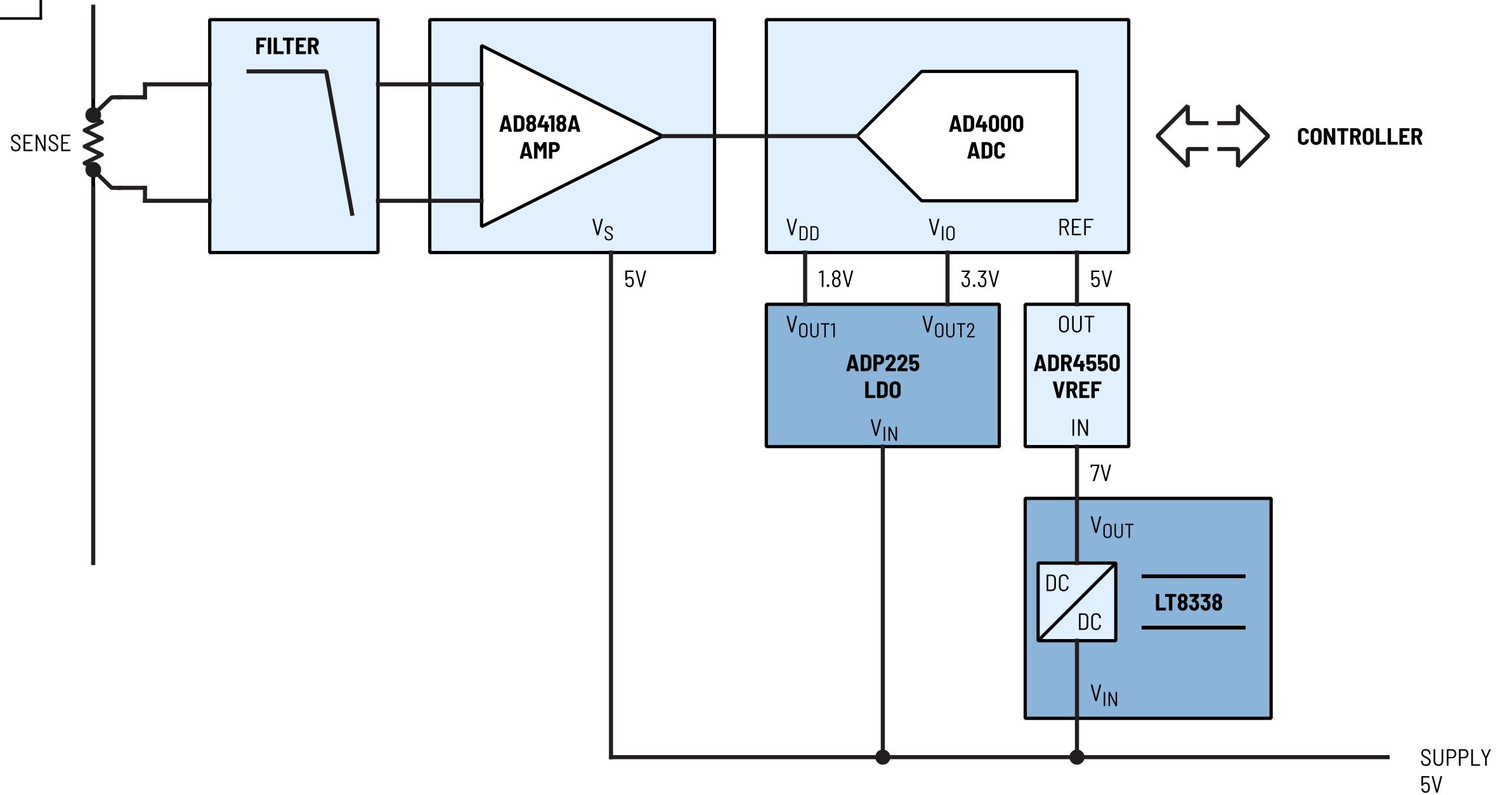
Shunt: Common-Mode Voltage up to 70V

Supply Voltage

5V

12V

24V



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Generic Signal Chain for Current Measurement

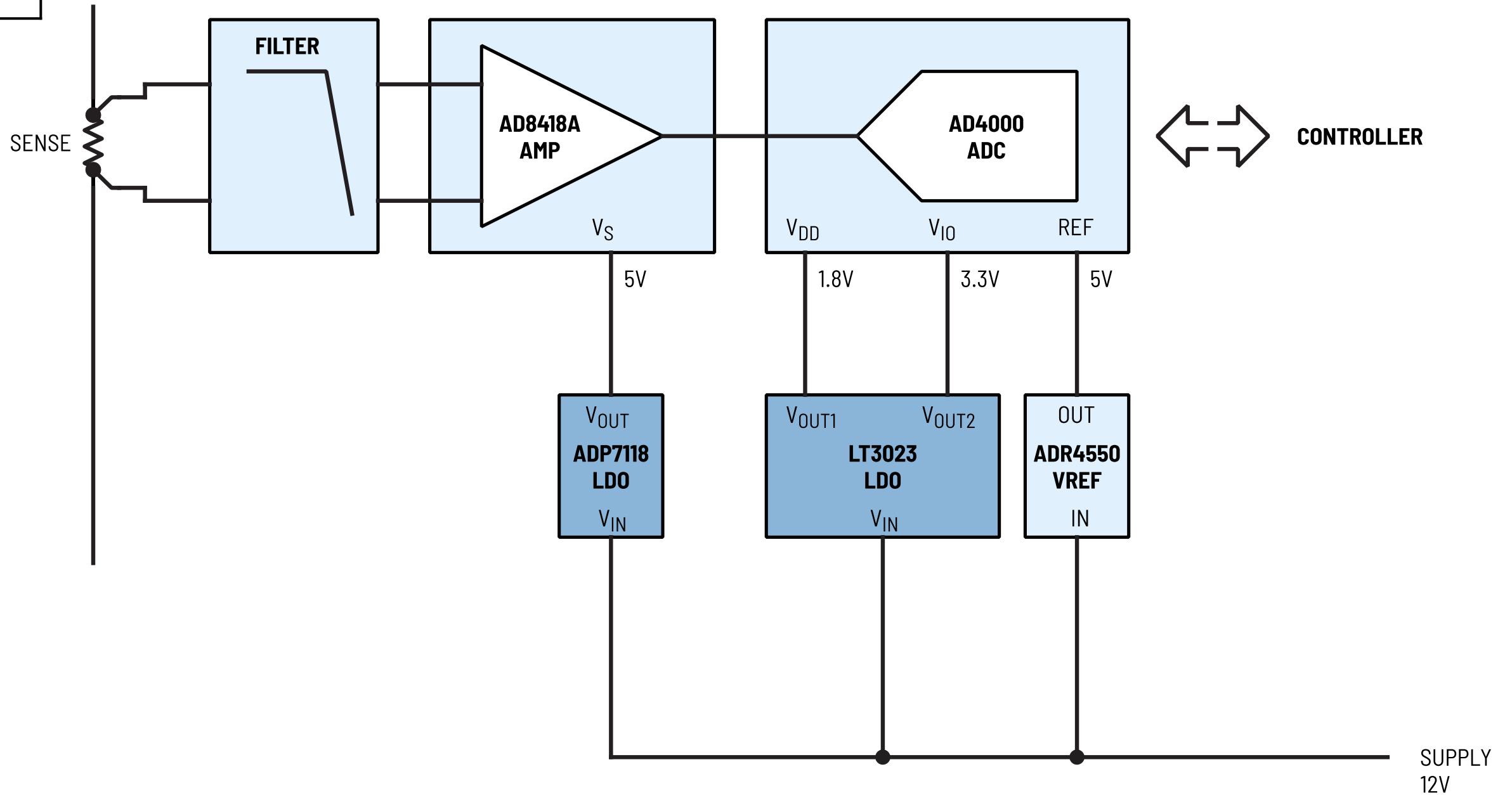
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Supply Voltage

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12V

24V



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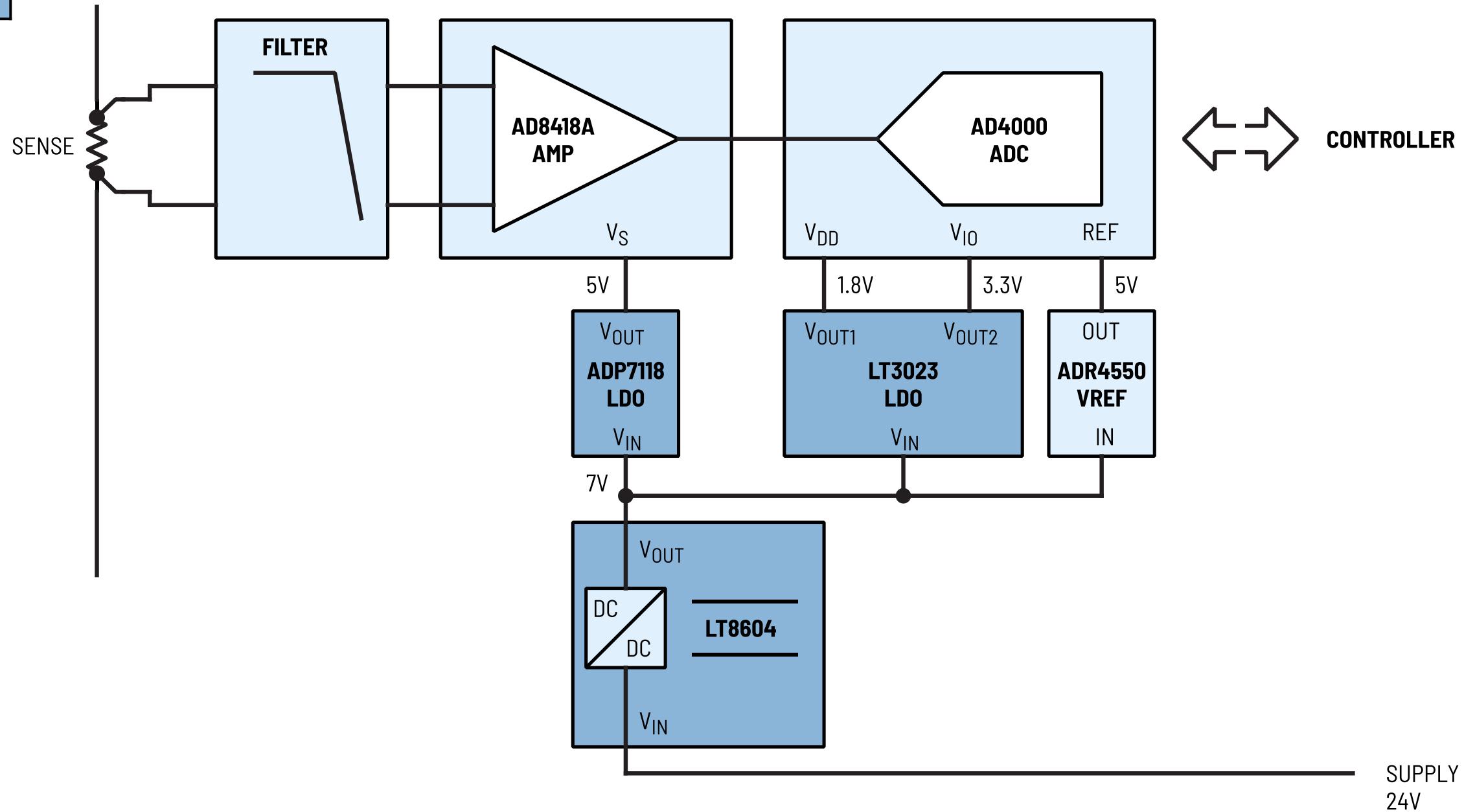
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Generic Signal Chain for Current Measurement

Shunt: Common-Mode Voltage up to 70V

Supply Voltage
5V
12V
24V



Precision Current Sensing

Generic Signal Chain for Current Measurement

Shunt: Common-Mode Voltage up to 70V

Supply Voltage

5V

12V

24V

PART #	DESCRIPTION
<u>ADP7118</u>	20 V, 200 mA, Low Noise, CMOS LDO Linear Regulator
<u>ADP225</u>	Dual, 300 mA Output, Low Noise, High PSRR Voltage Regulators
<u>LT3023</u>	Dual 100mA, Low Dropout, Low Noise, Micropower Regulator
<u>LT8338</u>	40V, 1.2A Micropower Synchronous Boost Converter with Pass-Thru
<u>LT8604</u>	High Efficiency 42V/120mA Synchronous Buck

Supply Voltage

5V
12V
24V

POWER REQUIREMENTS

PARAMETER	STAGES	Current Sense Amp	Filter	ADC		Reference
	Part #	AD8418A	-	AD4000		ADR4550
	Pin	V_S	-	V_{DD}	V_{IO}	IN
Supply Voltage	V	5	-	1.8	3.3	5.1 to 15
Supply Current	mA	4.2	-	5.4	0.15	0.95
PSRR	dB	80	-	65 (700kHz)		60 (1MHz)

Note 1: The supply currents indicated are the maximum quiescent current of the supply rails. For overall full load or short circuit current specifications, refer to the datasheets of the signal chain components.

Note 2: The supply voltages indicated are the values for typical applications.

Note 3: Consult the corresponding datasheets for details on: (1) power supply rejection ratio (PSRR) and (2) power dissipation.

Note 4: The actual supply current requirement shall be multiplied depending on the number of channels on the signal chain.