

## SPECIFICATIONS

# RM-26999

## 4-Channel Power Measurements Conditioner

### Definitions

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*Warranted* specifications describe the performance of a model under stated operating conditions and are covered by the model warranty.

*Characteristics* describe values that are relevant to the use of the model under stated operating conditions but are not covered by the model warranty.

- *Typical* specifications describe the performance met by a majority of models.
- *Typical-95* specifications describe the performance met by 95% ( $\approx 2\sigma$ ) of models with a 95% confidence.
- *Nominal* specifications describe an attribute that is based on design, conformance testing, or supplemental testing.

Specifications are *Typical* unless otherwise noted.

### Conditions

Specifications are valid for the range 0 °C to 55 °C unless otherwise noted.

These specifications are for the RM-26999. Accuracy for the entire system must be calculated including both the RM-26999 accuracy and the DAQ device accuracy.

### Voltage Input Characteristics

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Input voltage, maximum	1,000 V, Category II 2,000 V peak, other, non-MAINS circuits
Number of channels	4

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**Table 1. Signal Accuracy, 2,000 V Range**

Signal Frequency	Accuracy <sup>1,2</sup>	
	Typical-95	Warranted
DC	±0.05% of reading	±0.05% of reading
1 Hz to 500 Hz	±0.08% of reading	±0.1% of reading
>500 Hz to 1 kHz	±0.1% of reading	±0.2% of reading
>1 kHz to 5 kHz	±0.25% of reading	±0.9% of reading
>5 kHz to 10 kHz	±0.3% of reading	±1.15% of reading
>10 kHz to 200 kHz	±0.4% of reading	±1.35% of reading
>200 kHz to 1 MHz	±(0.004 × <i>signal frequency in kHz</i> )% of reading	±(0.014 × <i>signal frequency in kHz</i> )% of reading

System noise<sup>3</sup>

±2,000 V range	53 mV RMS
±1,000 V range	31 mV RMS
±400 V range	22 mV RMS
±200 V range	21 mV RMS
DC offset	2 mV
Noise contribution, 5 MHz bandwidth <sup>4</sup>	13 mV RMS, RTI
T <sub>cal</sub> <sup>5</sup>	23 °C ± 5 °C
Calibration interval	2 years
Gain drift	±25 ppm/°C
Attenuation	200:1
CMRR	>100 dB DC, typical
Long-term stability	125 ppm/ $\sqrt{1,000}$ hrs
Input impedance, single-ended to earth	10 MΩ    4.7 pF

<sup>1</sup> T<sub>cal</sub> ±5 °C. Accuracy is valid after offset compensation.

<sup>2</sup> Voltages that exceed 750 V from 30 kHz to 100 kHz or 220 V above 100 kHz are for reference only.

<sup>3</sup> The system noise specifications are representative values to help understand the expected quality of the measurement. A PX1e-6366 and RM-26999 were used to create this representative list.

<sup>4</sup> Noise contribution is referred to input (RTI) and is scaled up to account for the RM-26999 attenuation.

<sup>5</sup> T<sub>cal</sub> = temperature at which last external calibration was performed.

-3 dB bandwidth	1 MHz
Output impedance	50 $\Omega$

## Current Input Characteristics



**Note** Current input characteristics are determined by the connected DAQ devices. For more information about device input characteristics, refer to the device documentation on [ni.com/manuals](https://ni.com/manuals).



**Note** If you connect a current transducer with current output to the RM-26999, install a shunt to convert the current signal to a voltage signal. Refer to the *RM-26999 User Manual* on [ni.com/manuals](https://ni.com/manuals) for more information about connecting current transducers with current output.

Number of channels	4
DAQ device measurement voltage ranges	$\pm 1$ V, $\pm 2$ V, $\pm 5$ V, $\pm 10$ V
Burden resistors	0.5 $\Omega$ , 1 $\Omega$ , 2 $\Omega$ , 5 $\Omega$ , 10 $\Omega$
Maximum current input	Selectable on the DAQ device
Input protection	Determined by the DAQ device
Shunt accuracy	$\pm 0.05\%$ , metal foil, 2 W, maximum
Shunt gain drift	$\pm 0.2$ ppm/ $^{\circ}$ C

## Power Requirements

Voltage input range	24 V DC $\pm 5\%$
Maximum power consumption	150 W
Recommended power supply	NI PS-15 (5 A, 120 W) NI PS-16 (10 A, 240 W)

## Physical Characteristics

Dimensions	482.6 mm $\times$ 43.9 mm $\times$ 156.2 mm (19.00 in. $\times$ 1.73 in. $\times$ 6.15 in.)
Weight	3,020 g (106.50 oz)

# Safety Voltages

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Connect only voltages that are below these limits.

Input voltage range	1,000 V, Category II 2,000 V peak, other, non-MAINs circuits
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Channel-to-channel, channel-to-earth

Continuous working voltage	1,000 V, Category II 2,000 V peak, other, non-MAINs circuits
Transient overvoltage	6,000 V peak

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**Caution** Do not connect the RM-26999 to signals or use for measurements within Measurement Categories III or IV. Do not connect to signals or use for measurements above 1,000 V RMS within Measurement Category II.



**Attention** Ne connectez pas le RM-26999 à des signaux et ne l'utilisez pas pour effectuer des mesures dans les catégories de mesure III ou IV. Ne le connectez pas à des signaux et ne l'utilisez pas pour effectuer des mesures supérieures à 1000 Veff dans la catégorie de mesure II.

Measurement Category II is for measurements performed on circuits directly connected to the electrical distribution system. This category refers to local-level electrical distribution, such as that provided by a standard wall outlet, for example, 115 V for U.S. or 230 V for Europe. Above 1,000 V RMS, these test and measurement circuits are not rated for measurements performed on circuits directly connected to the electrical distribution system referred to as MAINs. MAINs is a hazardous, live electrical supply system to which equipment is designed to be connected to for the purpose of powering equipment. Above 1,000 V RMS, this product is rated for measurements of voltages from specially protected secondary circuits, up to 2,000 V peak. Such voltage measurements include signal levels, special equipment, limited energy parts of equipment, circuits powered by regulated low-voltage sources, and electronics.



**Caution** Connect the PE terminal to protective earth ground in the rack installation or electrical cabinet.



**Attention** Connectez le terminal de mise à la terre à la borne correspondante (masse) dans l'installation en rack ou dans l'armoire électrique.

# Environmental Characteristics

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## Temperature and Humidity

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### Temperature

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Operating	0 °C to 55 °C
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Storage	-40 °C to 71 °C
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### Humidity

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Operating	10% RH to 90% RH, noncondensing
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Storage	5% RH to 95% RH, noncondensing
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Pollution Degree	2
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Maximum altitude	2,000 m
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**Notice** This product is intended for use in indoor applications only.

## Shock and Vibration

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### Random vibration

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Operating	5 Hz to 500 Hz, 0.3 g RMS
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Non-operating	5 Hz to 500 Hz, 2.4 g RMS
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Operating shock	30 g, half-sine, 11 ms pulse
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