



MM4431

DC INPUT POWER FUNCTION EXPONENTIATOR TRANSMITTER $Y = X^m$

FEATURES

- Provides a DC Output Proportional to the Exponent of the DC Input (Output = X^m)
- Fully Isolated Output Available
- 1 V or 1 mA Minimum Input Span
- Unlimited* Choice of Input / Output Ranges
- Choice of Power Options
- 10 Year Warranty

DESCRIPTION

The MM4431 provides a DC output voltage or current proportional to the exponent (m) of the DC input. Typical input ranges are 4/20 mA, 10/50 mA, 0-1 V, 0-5 V, and 0-10 V DC. Other ranges are available down to minimum spans of 1 V or 1 mA DC.

The exponent (m) can be a value between 0.2 and 5. This range covers the most common requirements for measuring differential pressure in flow

applications such as encountered in orifice plate or pitot tubes. The range of (m) also includes the ranges used to provide flow data from Parshall flumes and V-notch weirs. In a Parshall flume, the flow is related to the height of the liquid level by the $3/2$ power of the height. In a V-notch weir, flow is related by the $5/2$ power to the liquid height.

All Wilkerson products are designed with RFI filters and lightning protection to reduce susceptibility to electrical noise and damage by lightning.

TYPICAL APPLICATIONS

Flow measurements, etc.

SPECIFICATIONS

INPUT RANGE

Voltage
select any range between
 ± 10 V max
(min span 1 V)
Typical inputs:
0-1 V, 0-5 V, 0-10 V

Current
select any range between
 ± 100 mA max
(min span 1 mA)
Typical inputs:
4/20 mA or 10/50 mA

INPUT IMPEDANCE

Voltage
100 kilohms min
Current
1.25 V drop typical,
others available

OUTPUT RANGE

Voltage
select any range from -10 V to
 $+15$ V, 10 mA max load
(min span 0.2 V)

Current
select any range from
0 to 50 mA max
24 V compliance
(1200 ohms at 20 mA max)
18 V compliance for ISO option
if full scale output > 20 mA

RESPONSE TIME
(Range Dependent)
 ≤ 150 ms

ACCURACY
($0.2 \leq m \leq 5.0$)
 $\pm 0.15\%$ of span

ISOLATION (Optional)
Breakdown Power / Circuitry
 > 1500 VAC rms
Breakdown Voltage
 > 1000 VAC rms

OUTPUT RIPPLE (Peak-to-Peak)
 $< 0.1\%$ of span

OPERATING TEMPERATURE
 14°F to 140°F / -10°C to 60°C

TEMPERATURE STABILITY
 $\pm 0.02\%$ of span/ $^\circ\text{C}$ max

POWER
115 VAC $\pm 10\%$, 50/60 Hz
(2.5 W max)
230 VAC $\pm 10\%$, 50/60 Hz
(2.5 W max)
(DC Power Option)
24 VDC (limits 21-32 VDC)
12 VDC (limits 10-16 VDC)

Isolation, DC power supply to
input common: 10 megohms

* Within specified range limits.

ORDERING INFORMATION

POWER

- 115 VAC, 50/60 Hz Power
- 230 VAC, 50/60 Hz Power
- 24 VDC Power, Transformer Isolated
- 12 VDC Power, Transformer Isolated

INPUT

Select Units

- VDC mADC

Enter Input

Zero Scale

Full Scale

Enter Exponent

Exponent

OUTPUT

Select Units

- VDC mADC

Enter Output

Zero Scale

Full Scale

OPTIONS

- Conformal Coating
- Isolation

TAGS

Specify Tag Numbers

Tag number is typed on product label at no charge.

Enter Tag Number(s)

Attach equation that defines the math function desired. Also include any tables or charts.

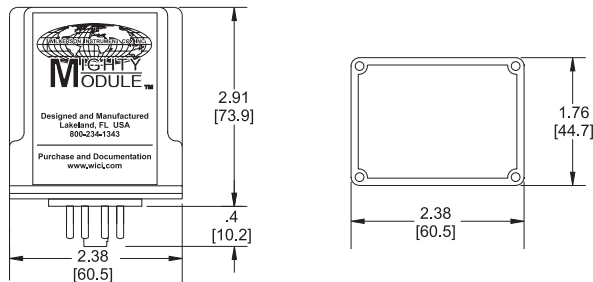
ACCESSORIES

MM4431

DR1	DIN-Rail, 35 mm Symmetrical, 39 inches (1 meter)	QTY _____
MP008	Plastic Socket, 8-pin Panel Mount or PVC Snap Track	QTY _____
TRK48	PVC Snap-Track, 4 ft. (MP008, MP011 & DMP8500)	QTY _____
DMP008	DIN-Rail Mounting Socket, 8-pin, 35 mm Symmetrical Rail	QTY _____
CLP1	Holddown Clip for MP008 and MP011	QTY _____
HKB-HK2D-8	Explosion-Proof Housing with MP008 Installed	QTY _____

DIMENSIONS

Inches [mm]



CONNECTIONS

PIN 1	AC L1 or DC +
PIN 2	No Connection
PIN 3	AC L2 or DC -
PIN 4	No Connection
PIN 5	Input +
PIN 6	Input -
PIN 7	Output +
PIN 8	Output -



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