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Installation Instructions for the 4AV Series Vane Sensors

ISSUE 2

PK 87605

WARNING

PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

GENERAL INFORMATION

4AV Hall effect vane sensors include a Hall effect sensor and a magnet in a common package. They are operated by passing a ferrous vane through the gap between the magnet and the sensor.

With no vane in the gap, the output is Operated (conducting). With the vane in the gap, the output is Released (non-conducting). The vane actuator is annealed low carbon cold rolled steel, type AISI 1018 or lower in carbon. Minimum recommended vane dimensions are required to ensure operating characteristics will be met.

ELECTRICAL CHARACTERISTICS

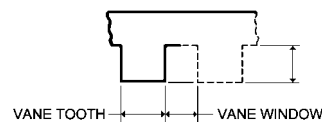
Catalog Listing	Termination	Lead Length	Supply Voltage All Listings	Supply Current All Listings	Output Voltage All listings	Output Sink Current All listings
4AV15F	24 AWG Wire	5.50 ± 0.25	4.5 VDC through 26.5 VDC	18.5 mA Max @ -40 °C	0.4 V Max @125 °C	40 mA Max
4AV16F	24 AWG Wire	7.45 ± 0.25		15.25 mA typical	0.1 typical	
4AV17F	24 AWG Wire	13.15 ± 0.50		11.75 mA @25 °C typical	0.075 V @25 °C typical	Dual output sink currents are summed to reach total.
4AV18F	24 AWG Wire	18.15 ± 0.50				
4AV19F	24 AWG Wire	22.00 ± 0.50				
4AV20F	.015 X .025 PCB	0.140				
4AV20F-T1*	.025 X .025 Connector	AMP Terminal Block 103323-4				
4AV20F-T2**	.025 X .025 Connector	Molex Terminal Block 22-05-3041				

*Will mate with AMP Connector Housing 87499-8, not supplied

**Will mate with Molex Connector Housing 2695/6471, not supplied

VANE DIMENSIONS (mm/in)

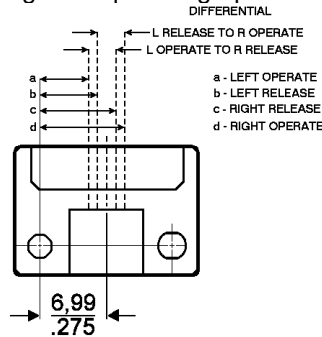
Thickness	Min. Window	Min. Tooth	Min. Tooth Depth
1,0/0.4	10,2/.40	10,2/.40	9,27/.365
1,6/.06	10,2/.40	6,3/.25	9,27/.365



MECHANICAL CHARACTERISTICS (mm/in)

Series	Left Operate a	Left Release b	Left Diff. d	Right Operate d	Right Release c	Right Diff. c	L-R Diff.
4AV*	5,4/.213	6,0/.237	0,6/.024	8,6/.337	7,9/.313	0,6/.024	2,5/.100

*Operating characteristics of the 4AV are adjusted to produce a $.100 \pm .010$ dimension between the Operate point on one side of the package to the Release point on the other side. The actuator can be designed to produce a specific pulse width for timing or sequencing operations.



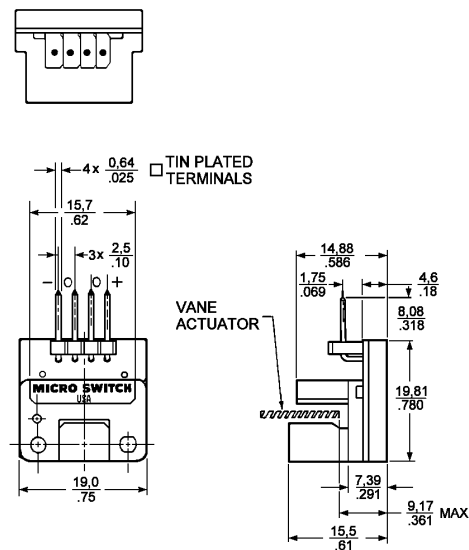
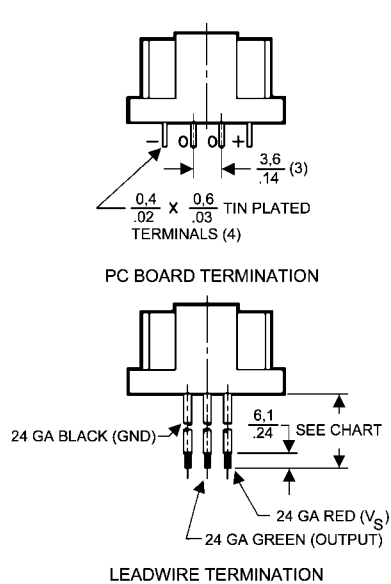
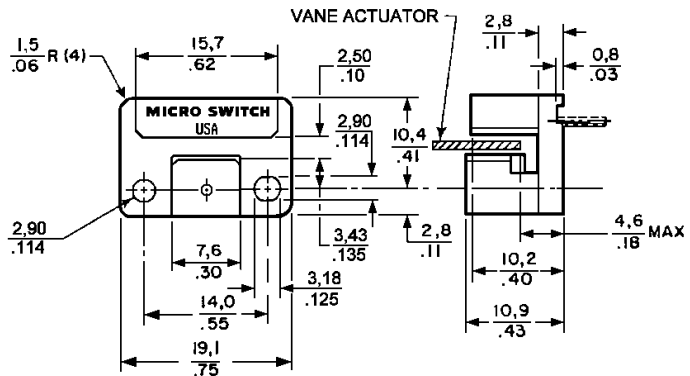
MOUNTING DIMENSIONS (for reference only)

CAUTION

PRODUCT DAMAGE

- Do not exceed electrical specifications.
- Do not mis-wire the output connection.
- Do not reverse supply voltage polarity.
- Handle terminals with care.

Failure to comply with these instructions may result in product damage.



Mates with AMP housing 87499-8

SOLDERING

CAUTION

PRODUCT DAMAGE

- Ensure iron tip is clean when soldering.
Failure to comply with these instructions may result in product damage.

Hand Soldering

The following is recommended:

1. Flux: Rosin Base
2. Solder: Kester #44 60-40 rosin core, or equivalent.
3. Soldering Iron: Type; Weller, Model TC-552, 55 watt or equivalent.
4. Tip Size: 3mm (.118 in.) Diameter x 30mm (1.182 in.) long
5. Tip Temperature: 288°C (550°F) max
6. Terminal Contact Time: 6 seconds **max**.

Wave Soldering

The following is recommended:

1. Flux: London Chemical Co. Loncoflux - 106A35 or equivalent
2. Preheat: Preheaters should be set to give 95 °C (200 °F) on the top (component side) of printed circuit board just prior to board entering the wave. (May have to be adjusted depending upon board thickness.)
3. Solder Temperature: 260 °C (500 °F) max.; preferably 252 °C to 260 °C (485 °F to 500 °F).
4. Speed: Set conveyor speed to approximately 4.5 feet/minute (1,37 meters/minute).
5. Printed circuit board requires rigid support during wave soldering.

CLEANING

Hand Cleaning

Clean areas with a 50-50 mixture of isopropyl alcohol and clean tap water. Dry in a 71 °C (160 °F) oven for 10-15 minutes, preferably in a non-circulating oven. This will remove all moisture from the assembly, which must be done before electrical testing, or application.

Machine Cleaning *

Detergent: London Chemical Company Loncoterge 444-NRT6 or equivalent. Equipment: Dee Electric Aqueous Cleaner or equivalent. The following is recommended:

1. Wash Section: 55 °C (130 °F) maximum water temperature, 5 to 10% maximum solution soft water, low pressure nozzles (60 psi) on top spray and high pressure nozzles (120 psi) on bottom spray, conveyor speed 3 feet/minute minimum. Recirculating tank.
2. Rinse Section #1: Clean tap water up to 25 grains hard, salt free (to minimize possibility of corrosion), unheated, non-recirculating, with high pressure nozzles (120 psi).
3. Rinse Section #2: Clean deionized water only, high pressure nozzles (120 psi), unheated and non-recirculating.
4. Air Knife Section: To remove excessive amounts of water.
5. Drying Section: 71°C (160 °F) drying for 10-15 minutes, preferably in a non-circulating conveyor oven.

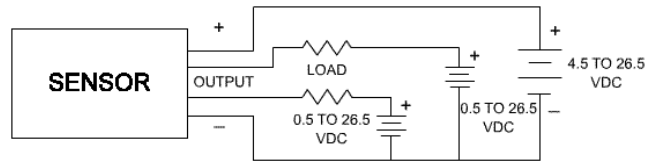
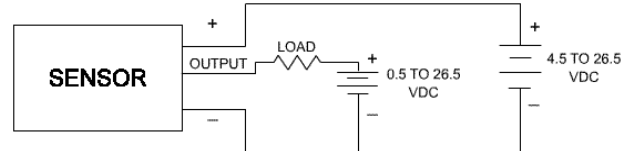
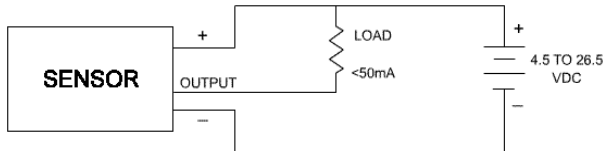
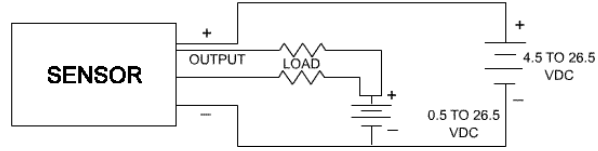
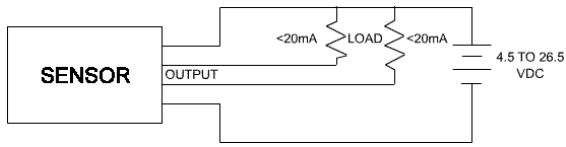
* In this cleaning system, the detergent in the wash section removes the non-polar contaminants, the first rinse removes the detergent solution, and the deionized water rinse removes the polar contaminants. The air knife and dryer remove all the moisture from the assembly, which must be done before electrical testing or application.

CAUTION

PRODUCT DAMAGE

- Ensure cleaner does not come in contact with sensor If other cleaning methods are selected for removal of flux residue.
Failure to comply with these instructions may result in product damage.

EXAMPLE WIRING DIAGRAMS



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Printed with Soy Ink
on 50% Recycled Paper

PK 87605-2-EN IL50 GLO 0303 Printed in USA

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