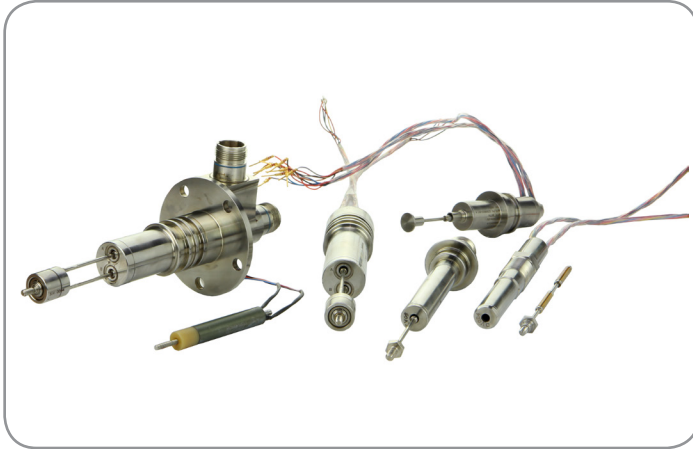


Aerospace Linear Variable Differential Transformers

Single Channel, Dual Parallel, & Dual Tandem Series

000820
Issue 1

Datasheet



DESCRIPTION

Aerospace Design Engineers working on flight controls, engines, nose wheel steering and pilot control applications have a need for continuous position monitoring. Honeywell's Linear Variable Differential Transformers (LVDT) provide solutions for each of these applications, and more.

Honeywell's new aerospace LVDT provides infinite resolution linear position solutions designed for use in harsh environments. They are an ideal product to be used on next generation aircraft which require expedited design cycle time from an experienced, stable supplier with an extensive aerospace product install base.

VALUE TO CUSTOMERS

- Pre-validated configurable LVDT platform approach to reduce design cycle time and get to market faster
- Honeywell has an established legacy of providing high quality products within the aerospace industry
- Reduced installation time by engineering design: rig point position eliminates shimming

FEATURES

- Pre-validated platform approach: Single channel, dual channel, and dual tandem offerings ensure a wide-variety of configurations and applications can be accommodated
- Rig point position eliminates need to shim during installation
- Enhanced reliability: Improved mean time between failure (MTBF) through industry-leading winding techniques, high-strength materials, and industry-leading design
- Supplier stability: Minimizes cost to serve and ensures supply
- Global engineering and application expertise: customers with a global footprint can rest assured that there is local support for new applications and troubleshooting

POTENTIAL APPLICATIONS

- Aerospace and defense
 - Flight controls (PFC/SFC)
 - Engines (mechanisms/valves)
 - Nose-wheel steering
 - Pilot controls

DIFFERENTIATION

- Pre-validated configurable platform approach to reduce cycle time and get to market faster
- Honeywell has a strong legacy of providing high-quality products within the aerospace industry
- Decreased failure rate through industry-leading design

PORTFOLIO

Honeywell's aerospace LVDTs are part of a comprehensive line of aerospace sensors, switches, and value-added solutions. To view Honeywell's complete product offering, click [here](#).

Aerospace LVDT, Single Channel, Dual Parallel, & Dual Tandem Series

Table 1. Specifications

| Characteristic | Parameter |
|--|--|
| Product type | Aerospace LVDT: linear ac-ac |
| Range | 8,89 mm to 35,56 mm [0.35 in to 1.4 in] stroke |
| Housing material | 17-4 PH stainless steel |
| Electrical connectors | EN2997YE01005MN, M83723/88P1005N, D38999/27YB5XN |
| Accuracy | ±0.5% of the full stroke gain from 0 % to 100 % of the LVDT stroke @ 21 °C [70 °F] |
| MTBF | 1 million hours min. |
| Current consumption | 11 mA max. |
| Input impedance | 650 ohms min. @ 3000 Hz |
| Output impedance | 2000 ohms max. @ 3000 Hz |
| Mechanical stroke | 0,254 mm [0.010 in] (additional to electrical stroke) |
| Normal operating pressure | 2000 psi |
| Proof pressure | 3000 psi |
| Burst pressure | 4000 psi |
| Pressure cycles | 50,000 cycles from 0 psig to 2000 psig @ 200 °C [392 °F] |
| Altitude sea level | to 55000 ft |
| Life requirements | 1,000,000 hours min. |
| Normal operating temp. range | -55 °C to 200 °C [-67 °F to 392 °F] |
| Full scale gain | ±0.5 V/V @ extreme strokes |
| Phase shift between primary to secondary | 15° max. @ room temperature |
| Phase shift between secondary to secondary | 5° max. @ room temperature |
| Temperature coefficient | 0.25 % for every 100 °F change in temperature in addition to 0.5 % room temperature accuracy |
| Sum voltage | (V1+V2) shall be 4.45 VRMS min. to 5.54 VRMS max. |
| Room temperature | 21° C ±5° C [70° F ±10°F] |
| Insulation resistance | 100 megohms min. at 500 Vdc |
| Mechanical endurance | 100,000 mechanical cycles (fully extended-fully retracted-fully extended) min. |
| Vibration | 60 G @ 5 Hz to 2000 Hz |
| Dielectric strength | 1500 V RMS min. at 60 Hz |
| Excitation | 7.07 ±0.14 V RMS sinusoidal wave at 3000 Hz ±50 Hz |
| Electrical grounding and bonding | 5 milliohms max. |
| Crosstalk | less than 0.0010 V/V |
| Channel tracking | less than 0.36 % of full scale at all stroke positions and across normal operating temperature |
| Weight | 0.22 lb to 2.1 lb |

Aerospace LVDT, Single Channel, Dual Parallel, & Dual Tandem Series

Table 2. Government and Military Standards

| Description | Standard |
|--|---|
| Reliability prediction of electronic equipment | MIL-HDBK-217F Notice 2 |
| Environmental Test Methods | MIL-STD 810G |
| Jet A-1 w/Additives and Jet A-1 w/o Additives | ASTM D 1655 |
| Requirements for Soldered Electrical and Electronic Assemblies | IPC J-STD-001B |
| Requirements for Electronic Grade Solder Alloys and Fluxed and Non-Fluxed Solid Solders for Electronic Soldering Applicants | IPC J-STD-006 |
| Wire, electrical, fluoropolymer-insulated, cross linked modified ETFE, lightweight, silver-coated, high-strength copper alloy, 200°C, 600 volt | AS22759/33 or Equivalent |
| Magnet Wire | NEMA MW1000 |
| Environmental Conditions and Test Procedures for Airborne Equipment | RTCA DO-160G |
| Metallic Materials Properties Development and Standardization | MMPDS |
| Operating Altitude | RTCA-DO-160G, Section 4, Category F3 |
| Vibration | RTCA-DO-160G, Section 8, Category R, Curve W with an amplification Q factor of 3 |
| Shock and Crash Safety | RTCA-DO-160G, Section 7.2.1 (operational shock) RTCA-DO-160G, Section 7.3.1 (crash safety impulse) RTCA-DO-160G, Section 7.3.3 (crash safety sustained) |
| Fungus | RTCA-DO-160G, Section 13, Category F |
| Humidity | RTCA-DO-160G, Section 6, Category B |
| Sand and Dust | RTCA-DO-160G, Section 12, Category D |
| Salt Spray | RTCA-DO-160G, Section 14, Category T |
| Icing | RTCA-DO-160G, Section 24, Category A |
| Water proofness | RTCA-DO-160G, Section 10, Category S |
| Temperature variation | RTCA-DO-160G, Section 5, Category A |
| Temperature shock | MIL-STD-810G, Method 503.5 for 100 cycles |
| Explosive atmosphere | RTCA-DO-160G, Section 9, Category E |

Aerospace LVDT, Single Channel, Dual Parallel, & Dual Tandem Series

Figure 1. Single-Channel Product Nomenclature

| Series | Channels | Stroke | Mounting | Termination | Probe Fitting | Reserved |
|-------------------------------|-------------------------|---|---------------------------------------|--|--|----------|
| 1LVT Aerospace LVDT | S Single channel | 035 8,89 mm [0.35 in] 050 12,7 mm [0.50 in] 070 17,78 mm [0.70 in] 100 25,4 mm [1.0 in] 140 35,56 mm [1.40 in] | A Threaded B Flanged | A EN2997YE01005MN B M83723/88P1005N C D38999/27YB5XN D Pigtail (flying leads) | A 0.138-32 threaded B 0.164-32 threaded | |

Figure 2. Dual-Tandem Product Nomenclature

| Series | Channels | Stroke | Mounting | Termination | Probe Fitting | Reserved |
|-------------------------------|----------------------|---|---------------------------------------|-----------------------|----------------------------|----------|
| 1LVT Aerospace LVDT | T Dual tandem | 035 8,89 mm [0.35 in] 050 12,7 mm [0.50 in] 070 17,78 mm [0.70 in] 100 25,4 mm [1.0 in] 140 35,56 mm [1.40 in] | A Threaded B Flanged | D Flying leads | B 0.164-32 threaded | |

Figure 3. Dual-Parallel Product Nomenclature

| Series | Channels | Stroke | Mounting | Termination | Probe Fitting | Reserved |
|-------------------------------|------------------------|---|---------------------------------------|---|--|----------|
| 1LVT Aerospace LVDT | P Dual parallel | 070 17,78 mm [0.70 in] 100 25,4 mm [1.0 in] 140 35,56 mm [1.40 in] | A Threaded B Flanged | A EN2997YE01005MN* B M83723/88P1005N* C D38999/27YB5XN* D Pigtail (flying leads) | A 0.138-32 threaded B 0.164-32 threaded | |

Aerospace LVDT, Single Channel, Dual Parallel, & Dual Tandem Series

Figure 4. Single-Channel (Wired) Dimensions

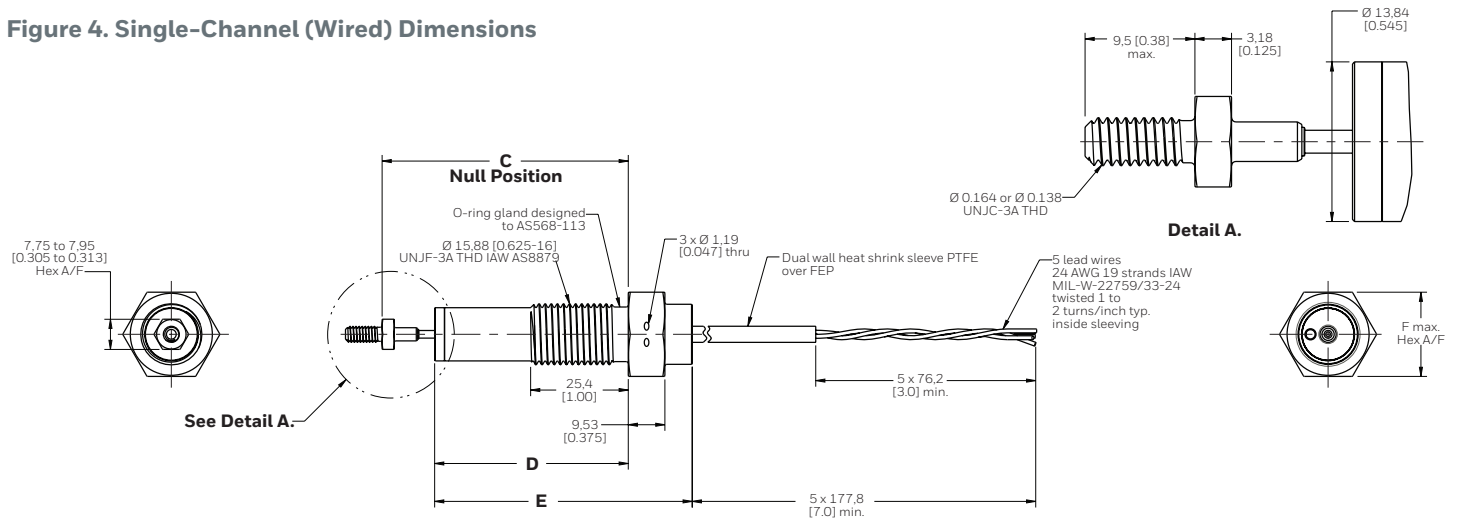


Figure 5. Single-Channel (Flanged) Dimensions

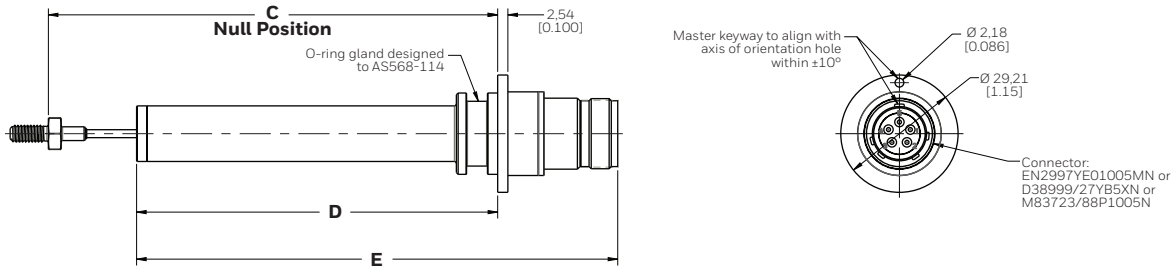


Table 3. Single Channel Dimensions

| Mounting Type | Catalog Listing | Total Electrical Stroke "A" | Total Mechanical Stroke "B" | Rig Position "C" | Housing Length "D" | Housing Length "E" | Housing Length "F" | Weight |
|---------------|-----------------|-----------------------------|-----------------------------|---------------------|--------------------|---------------------|---------------------|--------------|
| Threaded | 1LVTS035ADB | 8,89 mm [0.35 in] | 9,4 mm [0.37 in] | 64 mm [2.52 in] | 50,3 mm [1.98 in] | 67,06 mm [2.64 in] | 22,23 mm [0.875 in] | 0.22 lb max. |
| Threaded | 1LVTS050ADB | 12,7 mm [0.50 in] | 13,2 mm [0.52 in] | 66,04 mm [2.60 in] | 50,3 mm [1.98 in] | 67,06 mm [2.64 in] | 22,23 mm [0.875 in] | 0.22 lb max. |
| Flanged | 1LVTS100BAB | 25,4 mm [1.0 in] | 25,91 mm [1.02 in] | 111,76 mm [4.40 in] | 89,9 mm [3.54 in] | 119,89 mm [4.72 in] | - | 0.30 lb max. |

Figure 6. Single-Channel Wiring

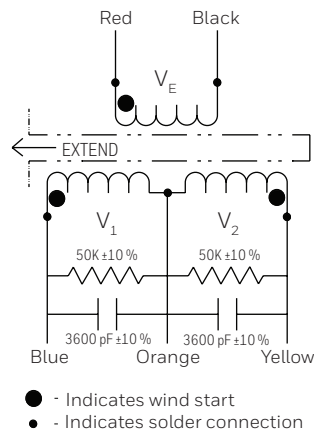


Figure 7. Single-Channel Stroke Definition

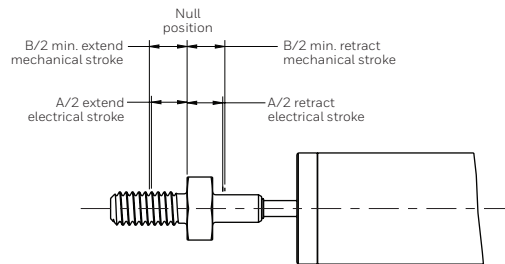
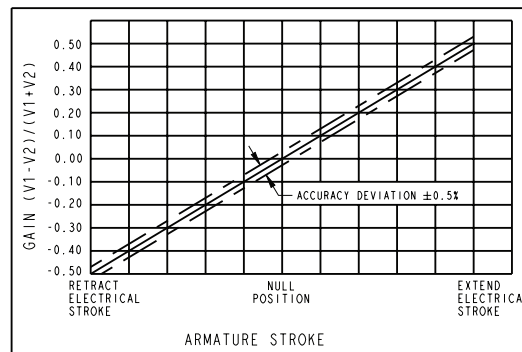


Figure 8. Single-Channel Gain vs. Stroke



Aerospace LVDT, Single Channel, Dual Parallel, & Dual Tandem Series

Figure 9. Dual-Tandem Dimensions mm [in]

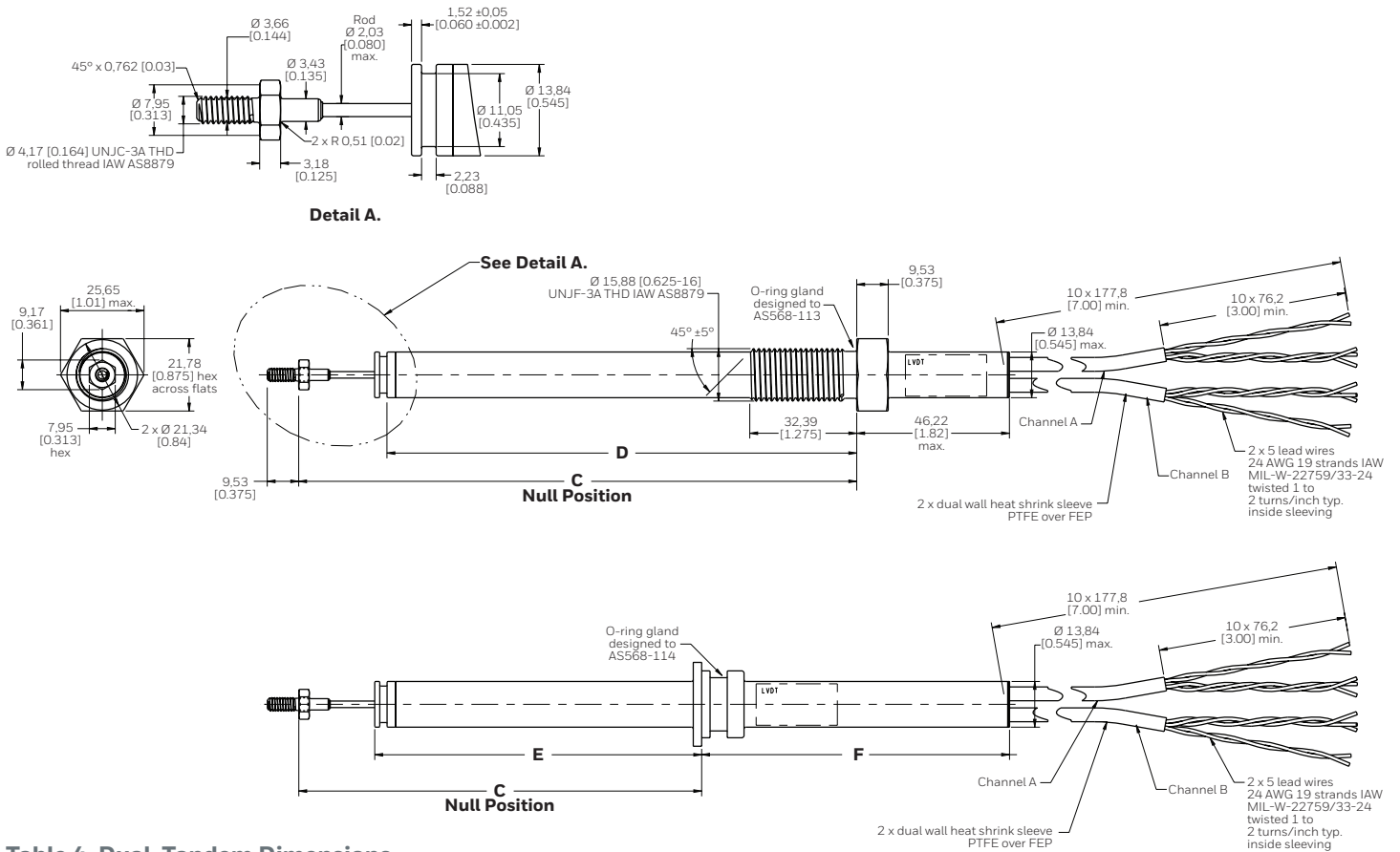


Table 4. Dual-Tandem Dimensions

| Mounting Type | Catalog Listing | Total Electrical Stroke "A" | Total Mechanical Stroke "B" | Rig Position "C" | Front Housing Length for Threaded Config "D" | Front Housing Length for Flanged Config "E" | Rear Housing Length for Flanged Config "F" |
|---------------|-----------------|-----------------------------|-----------------------------|----------------------|--|---|--|
| Threaded | 1LVTT140ADB | 35,56 mm [1.40 in] | 36,07 mm [1.42 in] | 168,96 mm [6.652 in] | 142,24 mm [5.60 in] | - | - |
| Flanged | 1LVTT140BDB | 35,56 mm [1.40 in] | 36,07 mm [1.42 in] | 121,97 mm [4.802 in] | - | 95,25 mm [3.75 in] | 93,22 mm [3.67 in] max. |
| Threaded | 1LVTT070ADB | 17,78 mm [0.7 in] | 18,29 mm [0.72 in] | 138,73 mm [5.462 in] | 122,43 mm [4.82 in] | - | - |

Figure 10. Dual-Tandem Wiring

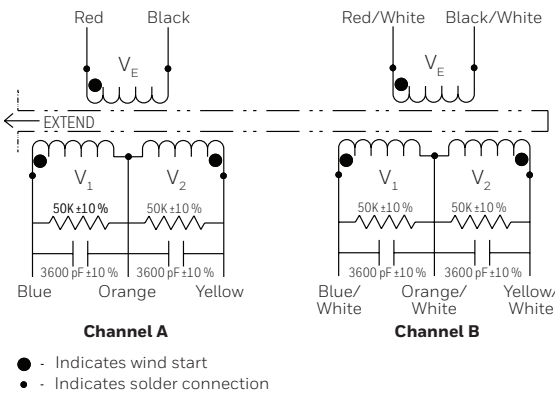


Figure 11. Dual-Tandem Stroke Definition

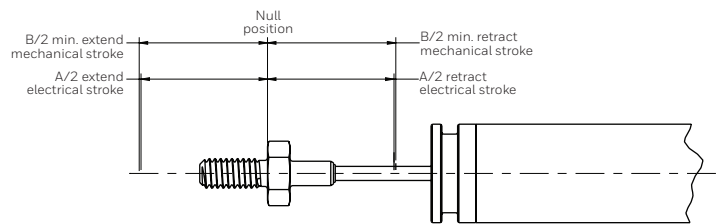
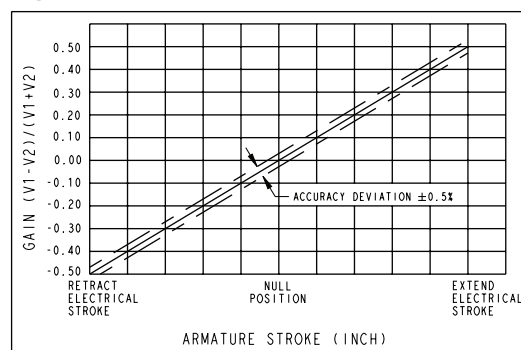


Figure 12. Dual-Tandem Gain vs. Stroke



Aerospace LVDT, Single Channel, Dual Parallel, & Dual Tandem Series

Figure 13. Dual-Parallel (Wired) Dimensions

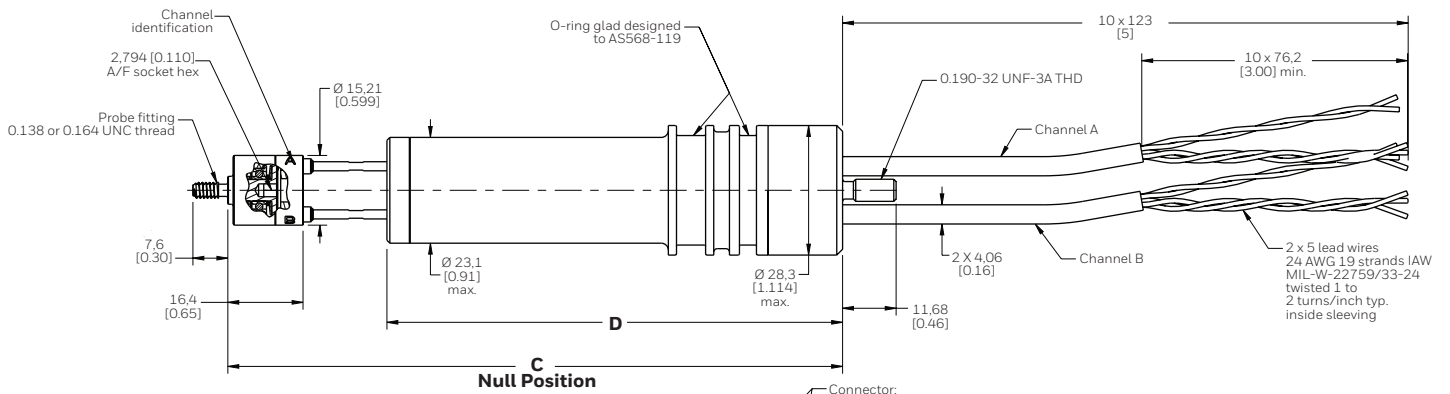


Figure 14. Dual-Parallel (Flanged) Dimensions

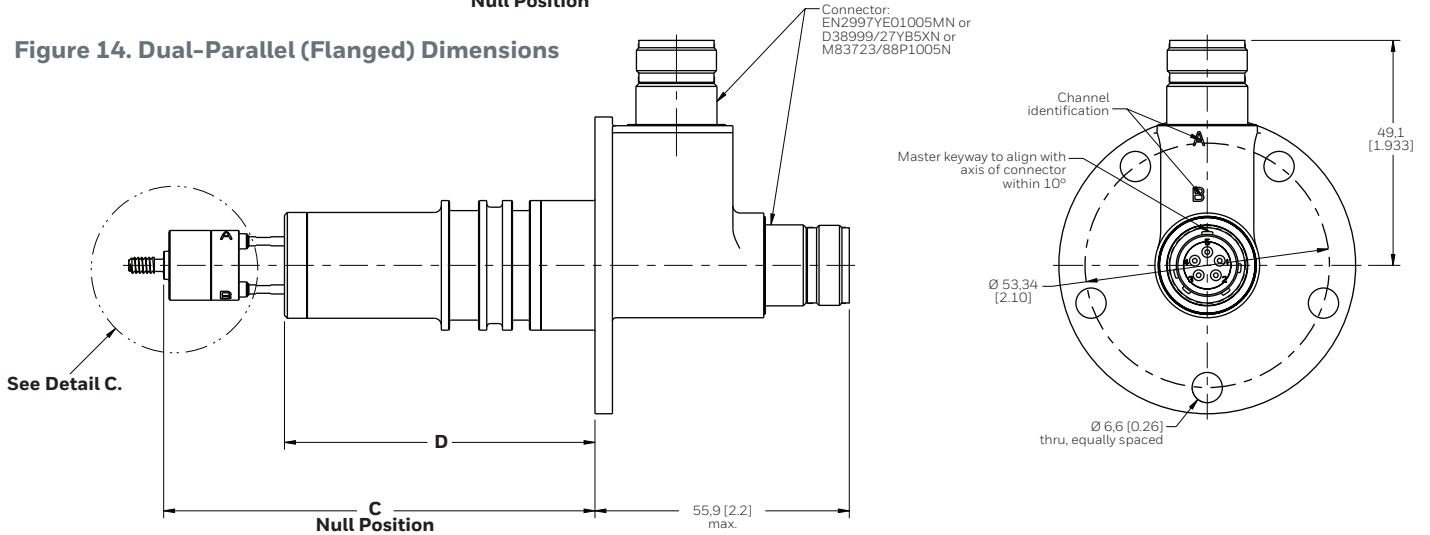
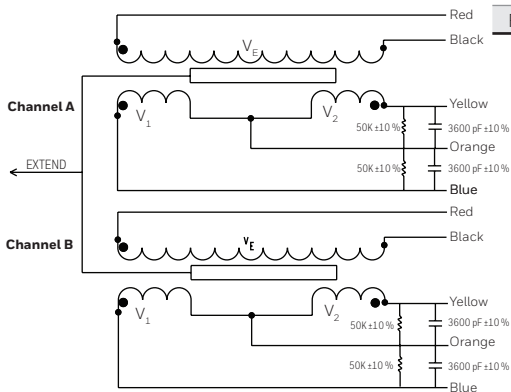


Table 5. Dual-Parallel Dimensions

| Mounting Type | Catalog Listing | Total Electrical Stroke "B" | Total Mechanical Stroke "C" | Rig Position "C" | Housing Length | Weight |
|---------------|-----------------|-----------------------------|-----------------------------|---------------------|---------------------|--------------|
| Threaded | 1LVTP140ADA | 35,56 mm [1.40 in] | 4,06 mm [0.16 in] | 135,1 mm [5.335 in] | 100,33 mm [3.95 in] | 0.55 lb max. |
| Flanged | 1LVTP070BAA | 17,78 mm [0.7 in] | 18,29 mm [0.72 in] | 94,16 mm [3.707 in] | 68,58 mm [2.70 in] | 1.00 lb max. |

Figure 15. Dual-Parallel Wiring



- Indicates wind start
- Indicates solder connection

Wire Color

| Pin Number | Channel A | Channel B |
|------------|-----------|-----------|
| 1 | Red | Red |
| 2 | Black | Black |
| 3 | Blue | Blue |
| 4 | Orange | Orange |
| 5 | Yellow | Yellow |

Figure 16. Dual-Parallel Stroke Definition

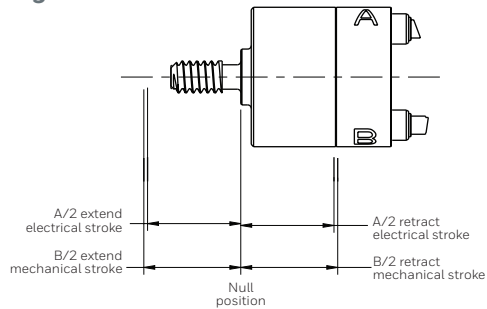
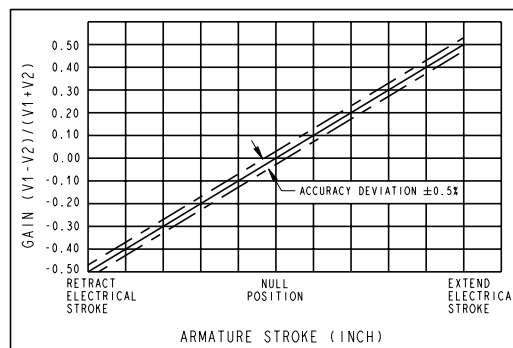


Figure 17. Dual-Parallel Gain vs. Stroke



ADDITIONAL MATERIALS

The following associated literature is available at sensing.honeywell.com:

- Product range guide
- Installation instructions
- Application Note
- Technical note

Find out more

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office.

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call **+1-815-235-6847** or **1-800-537-6945**,

visit **sensing.honeywell.com**,
or e-mail inquiries to **info.sc@honeywell.com**

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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.

WARNING **MISUSE OF DOCUMENTATION**

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

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

Warranty/Remedy

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgment or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items that Honeywell, in its sole discretion, finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

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