V3 SERIES

005002
Issue 1

Featuring FAA-Certified and Military-Qualified MICRO SWITCH Technology

APPLICATIONS

Presence Detection
Cabin and compartment latching and safe operation

Pressure & Temperature Switch
Precision detection of gas or liquid for fuel and oil safety and efficiency

Valve Position
Enables reliable and safe valve position detection

Power Switch
Reliable system control for motors, pumps, fans

Operator Controls
Interface control for heavy-duty panels and HMI

VALUE PROPOSITION

The V3, Honeywell's first V Basic MICRO SWITCH, provides a rugged switch solution to assist in achieving overall system level certification and design goals in harsh environmental applications. The V3 switch provides a reliable, repeatable solution over the full lifetime of the product. FAA/MIL certifications and material options for extended temperature range (up to 400°F) available.

V3 FEATURES	V3 BENEFITS	OUR VALUE
1, 5, 10, 11, 15, 25 A	Electrical ratings for design flexibility in rugged, industry standard footprint	Competitive cross references available
> 1M mechanical operations	Globally certified for reliable, repeatable actuation for life	Snap-spring mechanism with more than 80 years of MICRO SWITCH service
Military qualification	MIL-PRF-8805 qualification	Switches designed to meet the most demanding applications
FAA certifications	FAA-8130-3 compliance	
Material options for elevated temperature range (400°F) Material option diversity Teflon® plunger option Solder options available	Using rugged thermoset phenolic housings, select builds offer temperature ranges up to 400°F, Teflon-filled actuating plungers for smooth actuation, and specialty phenolics, such as Diallyl Phthalate, for demanding applications	Robust and reliable materials provide durable case, cover, and plunger options to withstand extreme environmental wear and tear

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Unless otherwise stated, all characteristic measurements tested according to UL and CSA standards and conditions. Parameters and acceptance criteria validated and confirmed in a certified lab environment. Technical details available upon request.

TABLE 1. PERFORMANCE SPECIFICATIONS

CHARACTERISTIC	MEASURE
Circuitry	SPDT, SPNO, SPNC
Operating force	6 oz to 14 oz; 15 g, 25 g, 50 g, 75 g, 100 g, 150 g, 300 g
Termination	quick connect, screw, solder, short solder
Actuators	pin plunger, roller, straight, long, sim roller
Agency certification	UL, CSA
Operating temperature	-40°C to 85°C/150°C/204°C
Mechanical life (cycles)	up to 10 million cycles
Radiation resistance	1.3×10^8 RADS (at ambient temperature)
Vibration resistance	Grade 1 (10 Hz to 500 Hz) per MIL-PRF-8805 (reference MIL-STD-202, Method 213)
Shock resistance	50 G max. (half-sine, 10 ms max.), per MIL-PRF-8805 (reference MIL-STD-202, Method 213)
Switch resistance	<1 % of load resistance (using 10.5 V or greater source voltage)
Dielectric strength	1000 Vac (switches rated 250 Vac) ; 1500 Vac (switches rated 277 Vac)
Insulation resistance	>100,000 Mohm (measured using 500 Vdc across switch gap and from terminals to ground)
Contact material	fine silver, gold plated, silver cadmium oxide, gold alloy
Housing material	thermoset phenolics
Actuating button material	thermoset phenolics
Auxiliary actuator material	stainless steel
Common terminal material	brass
NO/NC terminal material	brass
Moving blade	beryllium copper
Operating frequency	60 cycles per minute max. (recommended)
Average unit weight	0.30 oz max.
Packaging dimensions/ weight	16,0 mm × 10,3 mm × 27,7 mm
Country of origin	Mexico

MICRO SWITCH V3 SERIES PRODUCT NOMENCLATURE

The MICRO SWITCH V3 Series catalog listings are serialized. Therefore, a dedicated methodology is not applicable. The items below are defined elements that aid in the creation of a new catalog listing. Honeywell does not attempt to define the specific switch design by dedicated nomenclature definitions. As such, please review the detailed tables in this datasheet, as well as contact your local Honeywell sales representative or a customer service specialist to discuss your specific application.

V3 Product family prefix

V3L This prefix indicates a V3 switch with an external actuating lever

-D8 This suffix is an indication of quick connect 0.188 in wide × 0.020 in thick terminals

-D9 This suffix is an indication of quick connect 0.250 in wide × 0.032 in thick terminals

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TABLE 2. ELECTRICAL SPECIFICATIONS

RATING CODE	UL (UL 1054, FILE E12252) CSA (C22.2 NO. 55, FILE 41370)
L22	**1 A 125 Vac** 100,000 cycles
L109	**5 A 1/10 HP 125 or 250 Vac** 6,000 cycles
L162	**5 A 125, 250, 277 Vac** **1/10 HP 250 Vac** 6,000 cycles
L29	**10 A 250 Vac** 100,000 cycles
L112	**10 A 1/3 HP 125 or 250 Vac** **1/2 A 125 Vdc, 1/4 A 250 Vdc** **4 A 125 Vac "L"** 100,000 cycles
L118	**10 A 1/8 HP 125 or 250 Vac** 100,000 cycles

TABLE 2. ELECTRICAL SPECIFICATIONS

RATING CODE	UL (UL 508, FILE E22779) CSA (C22.2 NO. 14, FILE 41371)
Fig.241	**25 A , 277 Vac** **1 HP, 125 Vac** **2 HP, 250 Vac** 100,000 cycles at stated amperage and voltage. 30,000 cycles at stated horsepower ratings.

TABLE 2. ELECTRICAL SPECIFICATIONS

RATING CODE	UL (UL 1054, FILE E12252) CSA (C22.2 NO. 55, FILE 41370)
L131	**10 A 1/4 HP 125 or 250 Vac** **1/2 A 125 Vdc, 1/4 A 250 Vdc** **3 A 125 Vac "L"** 100,000 cycles
L156	**11 A 1/3 HP 125, 250 or 277 Vac** **1/2 A 125 Vdc, 1/4 A 250 Vdc** **4 A 125 Vac "L"** 100,000 cycles
L83	**15.1 A 1/2 HP 125, 250 Vac** **1/2 A 125 Vdc, 1/4 A 250 Vdc** **5 A 125 Vac "L"** 100,000 cycles
L86	**15.1 A 1/3 HP 125, 250 Vac** **1/2 A 125 Vdc, 1/4 A 250 Vdc** **5 A 125 Vac "L"** 100,000 cycles
L259	**15.1 A 250 Vac** 100,000 cycles

TABLE 2. ELECTRICAL SPECIFICATIONS

MIL-PRF-8805: V3-1001, V3-1002 and V3-1003 (25,000 cycles)

Load	Sea level		50,000 feet	
	28 Vdc	115 Vac, 60 Hz	28 Vdc	115 Vac, 60 Hz
Resistive	10 A	10 A	10 A	10 A
Inductive	6 A	10 A	6 A	10 A
Motor	6 A	3 A	–	–

TABLE 2. ELECTRICAL SPECIFICATIONS

MIL-PRF-8805: V3-1201 (25,000 cycles)

Load	Sea level		50,000 feet	
	28 Vdc	115 Vac, 60 Hz	28 Vdc	115 Vac, 60 Hz
Resistive	10 A	10 A	10 A	10 A
Inductive	10 A	10 A	6 A	10 A
Motor	6 A	3 A	–	–

Note: Stated cycles represent the actual cycle count at which formal UL or formal Military testing was suspended. It does not represent end-of-life expectations. True switch life is dependent upon the actual application variables and the environment in which the switch is subjected to.

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In addition to carrying standard agency approvals (UL and CSA), select offerings within the Honeywell V3 product family also maintain United States Military and Federal Aviation approvals. Although all V3 switch designs share similar materials and design features, these select products have successfully completed additional rigorous test programs to achieve aviation and military certifications.

FAA-PMA

Parts Manufacturer Approval (PMA) is an approval granted by the United States Federal Aviation Administration (FAA) to select V3 catalog listings within the Honeywell portfolio of electromechanical switches. These PMA switches are approved by the FAA, each meeting airworthiness requirements of the FAA standard FAA 8130-3. This approval grants a "license" to HON to produce and sell select V3s for installation, replacement part, and technical support on certified aircraft. The FAA follows with its manufacturing authorization. The Authorized Release Certificate (Airworthiness Approval Tag) is provided with each shipment of FAA-PMA marked V3 switches to support fleet installation, maintenance, repair, and operations activities.

These switches thrive in high cost-of-failure applications with **FAA-PMA approvals**.

MICRO SWITCH Basics are **rugged, strong**, and built to outlast the toughest applications.

TABLE 3. FAA CERTIFIED V3 CATALOG LISTINGS – AVIATION DETAILS

Catalog Listing	Supplement #	FA#	Aircraft Model #	ICDS #
V3L-2228	13 Pg. 1	FA-10078	737-100/200/300/400/500/700/800	A16WE
V3L-3004	13 Pg. 1	FA-10002	737-100/200/300/400/500	A16WE

TABLE 4. FAA CERTIFIED V3 CATALOG LISTINGS - CHARACTERISTIC DETAILS

Catalog Listing	Electrical Rating	Lever Type	Operating Force (max.)	Release Force (min.)	Differential Travel (max.)	Overtravel (max.)	Operating Position	Pretravel (max.)
V3L-2228	10 A, 125 Vac or 250 Vac	Short roller	50 g [1.76 oz]	5 g [0.18 oz]	0,33 mm [0.013 in]	1,14 mm [0.045 in]	20,6 mm ±0,76 mm [0.810 in ±0.030 in]	1,19 mm [0.047 in]
V3L-3004	15.1 A, 125 Vac to 250 Vac	Roller	86 g [3.03 oz]	9 g [0.32 oz]	0,76 mm [0.030 in]	1,65 mm [0.065 in]	20,6 mm ±1,52 mm [0.810 in ±0.060 in]	3,18 mm [0.125 in]

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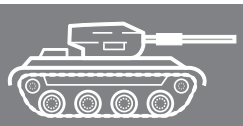
MILITARY QUALIFICATION

United States Military Qualification is obtained through testing and authenticity screening of select Honeywell V3 switches to stringent Military Standards for Performance (PRF) or Detail (DTL) documentation requirements. Subjecting the V3 switches to the rigors of military standards establishes a uniform method for product testing beyond those of standard agencies UL and CSA, while capturing details concerning acceptable performance criteria for use by all branches of the armed forces: ARMY, NAVY, USMC and AIR FORCE. These stringent qualification tests are preformed using uniform methods for mechanical, electrical and environmental conditions to verify both the design and the manufacturing processes that correspond to the Honeywell V3 switch portfolio. These demanding evaluations are conducted within our own military approved internal laboratory – where an extremely high level of accuracy, both test set-up and data acquisition, must be maintained.



These switches thrive in high cost-of-failure applications with **MIL approvals**.

MICRO SWITCH Basics are **rugged, strong**, and built to outlast the toughest applications.

TABLE 5. MILITARY QUALIFIED V3 CATALOG LISTINGS - MILITARY DETAILS

Military Part Number	Catalog Listing	Military Specification	Spec Sheet or MIL STD Drawing	Spec Sheet (document ID)
MS25253-1	V3-1001	8805	8805/27	MIL-PRF-8805/27
MS25253-3	V3-1002	8805	8805/27	MIL-PRF-8805/27
MS25253-2	V3-1003	8805	8805/27	MIL-PRF-8805/27
M8805/90-001	V3-1201	8805	8805/90	MIL-PRF-8805/90

TABLE 6. MILITARY QUALIFIED V3 CATALOG LISTINGS - CHARACTERISTIC DETAILS

Catalog Listing	Lever Type	Operating Force (max.)	Release Force (min.)	Differential Travel (max.)	Overtravel (max.)	Operating Position	Free Position	Release Travel (min.)
V3-1001	Pin plunger	397 g [14 oz]	113,4 g [4 oz]	0,41 mm [0.016 in]	1,01 mm [0.040 in]	14,68 mm ±0,38 mm [0.578 in ±0.015 in]	15,88 mm [0.625 in]	0,25 mm [0.010 in]
V3-1002	Pin plunger	397 g [14 oz]	113,4 g [4 oz]]	0,41 mm [0.016 in]	1,01 mm [0.040 in]	14,68 mm ±0,38 mm [0.578 in ±0.015 in]	15,88 mm [0.625 in]	0,25 mm [0.010 in]
V3-1003	Pin plunger	397 g [14 oz]	113,4 g [4 oz]	0,41 mm [0.016 in]	1,01 mm [0.040 in]	14,68 mm ±0,38 mm [0.578 in ±0.015 in]	15,88 mm [0.625 in]	0,18 mm [0.007 in]
V3-1201	Pin plunger	75 g [2.65 oz]	10 g [0.35 oz]	0,25 mm [0.010 in]	1,27 mm [0.050 in]	14,68 mm ±0,38 mm [0.578 in ±0.015 in]	15,88 mm [0.625 in]	0,25 mm [0.010 in]

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The following V3 catalog listings offer an example of the overall portfolio. Please contact your local sales representative and/or Honeywell customer service to discuss your specific needs.

TABLE 7. CONFIGURATIONS AND CHARACTERISTICS

Actuation Type	Actuation Picture	Catalog Listing	Recommended for	Electrical Data	Operating force (max.) N [oz]	Release Force (min). N [oz]	Pretravel (max.) mm [in]	Overtravel (min.) mm [in]	Differential Travel mm [in]	Operating Position** mm [in]
Pin plunger		V3-101-D8	Higher force. Most applications	11 A	2,22 [8]	0,56 [2]	1,2 [0.047]	1,02 [0.040]	0,15 to 0,41 [0.006 to 0.016]	14,7 [0.578]
		V3-129	Operating in temperature to 150°C [302°F]	11 A	2,22 [8]	0,56 [2]	1,2 [0.047]	1,02 [0.040]	0,15 to 0,41 [0.006 to 0.016]	14,7 [0.578]
		V3-245	Operating in temperature to 204°C [400°F]	10 A	2,78 to 6,95 [10 to 25]	1,67 [6]	1,2 [0.047]	1,02 [0.040]	0,15 to 0,41 [0.006 to 0.016]	14,7 [0.578]
Short straight 21,3 mm [0.860 in]		V3L-2905	High force. Up to 25 A load handling	25 A	2,64 [9.5]	0,24 [0.85]	1,4 [0.055]	0,81 [0.032]	0,3 [0.012]	15,32 ±0,51 [0.603 ±0.020]
Stan-dard straight 35,6 mm [1.40 in]		V3L-1229	Low force	10 A	1,2 [4.32]	0,14 [0.5]	2,79 [0.110]	2,29 [0.090]	0,76 [0.030]	15,2 ±1,5 [0.600 ±0.060]
		V3L-389	Higher force. Most applications	11 A	1,11 [4]	0,14 [0.5]	3,18 [0.125]	2,29 [0.090]	1,27 [0.050]	15,2 ±1,5 [0.600 ±0.060]
Long straight 59,4 mm [2.34 in]		V3L-1078	General use. Gold-alloy crosspoint contacts	1 A	1,39 [5]	0,14 [0.5]	6,35 [0.250]	2,34 [0.092]	2,18 [0.086]	15,32 [0.603]
		V3L-2436	Lower force	5 A	0,07 [0.25]	–	5,08 [0.200]	4,06 [0.160]	1,4 [0.055]	15,2 ±2 [0.600 ±0.080]
		V3L-1084	Highest force. Up to 15.1 A load handling	15.1 A	1,11 [4]	0,14 [0.5]	6,6 [0.260]	3,81 [0.150]	2,29 [0.090]	14,35 ±1,5 [0.565 ±0.060]

Abbreviation	Term	Definition
OP	Operating Position	position that the switch contacts change state
PT	Pretravel	distance the actuator moves to trigger the switch
DT	Differential Travel	distance between the OP and the RP
OT	Overtravel	max distance the actuator can move past the OP
RP	Release Point	point that contacts return to free state from OP

TABLE 7. CONFIGURATIONS AND CHARACTERISTICS

Actuation Type	Actuation Picture	Catalog Listing	Recommended for	Electrical Data	Operating force (max.) N [oz]	Release Force (min). N [oz]	Pretravel (max.) mm [in]	Overtravel (min.) mm [in]	Differential Travel mm [in]	Operating Position** mm [in]
Simulated roller 32,6 mm [1.285 in]		V3L-607	General use. Gold-alloy crosspoint contacts	1 A	1,11 [4]	0,14 [0.5]	3,18 [0.125]	2,03 [0.080]	0,81 [0.032]	18,5 [0.730]
		V3L-84	Highest force. Up to 15.1 A load handling with reduced life	15.1 A	2,22 [8]	0,28 [1]	3,18 [0.125]	2,03 [0.080]	0,81 [0.032]	18,5 [0.730]
Short roller lever 20,6 mm [0.81 in]		V3L-139	Higher force. Most applications	11 A	2,22 [8]	0,56 [2]	1,5 [0.060]	1,02 [0.040]	0,41 [0.016]	20,6 ±0,76 [0.810 ±0.030]
		V3L-3	Highest force. Up to 15.1 A load handling with reduced life	15.1 A	3,89 [14]	0,83 [3]	1,52 [0.060]	1,02 [0.040]	0,41 [0.016]	20,6 ±0,76 [0.810 ±0.030]
		V3L-3003-D8	High force. Up to 15.1 A load handling	15.1 A	1,89 [6,8]	0,15 [0.53]	1,2 [0.047]	1,02 [0.040]	0,05 to 0,25 [0.002 to 0.010]	20,6 ±0,76 [0.810 ±0.030]
Standard roller 34 mm [1.34 in]		V3L-111	Higher force. Most applications	11 A	1,11 [4]	0,14 [0.5]	3,18 [0.125]	2,16 [0.085]	1,27 [0.050]	20,6 ±1,5 [0.810 ±0.060]
		V3L-2163	Low force	10 A	0,31 [1.1]	0,02 [0.07]	3,18 [0.125]	2,16 [0.085]	0,76 [0.030]	20,6 ±1,5 [0.810 ±0.060]
		V3L-3004	Higher force. Up to 15.1 A load handling	15.1 A	0,89 [3.2]	0,14 [0.5]	3,18 [0.125]	2,16 [0.085]	0,76 [0.030]	20,6 ±1,5 [0.810 ±0.060]

Abbreviation	Term	Definition
OP	Operating Position	position that the switch contacts change state
PT	Pretravel	distance the actuator moves to trigger the switch
DT	Differential Travel	distance between the OP and the RP
OT	Overtravel	max distance the actuator can move past the OP
RP	Release Point	point that contacts return to free state from OP

MOUNTING DIMENSIONS

Figure 1. V3 Series Standard Switch Dimensions

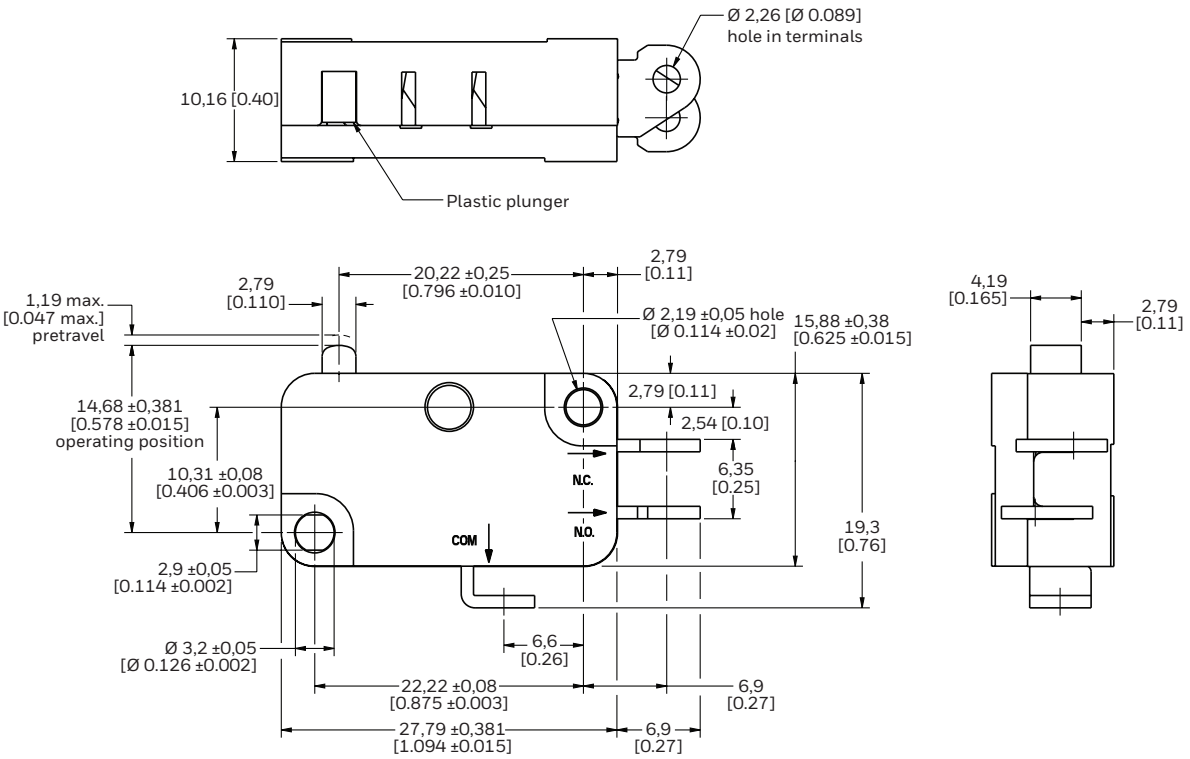
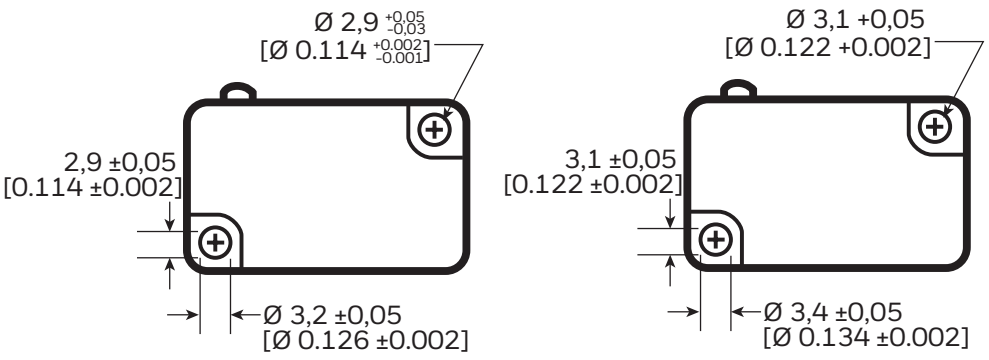


Figure 2. V3 Series Mounting Dimensions



Mounting torque: 2 in-lb min./5 in-lb max.

CONNECTION • DIMENSIONS

Dimensions are shown for reference only. mm [in]
Mounting torque: 2 in-lb min./5 in-lb max.

Figure 3. Quick Connect (D8 Style)
4,78 mm wide × 0.51 mm thick
[0.188 in wide × 0.020 in thick]

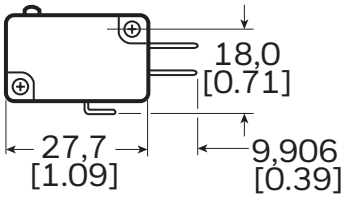


Figure 4. Quick Connect (D9 Style)
6,35 mm wide × 0.81 mm thick
[0.250 in wide × 0.032 in thick]

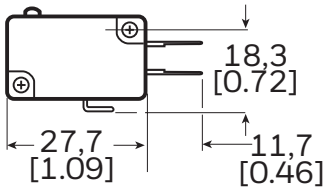


Figure 5. Screw

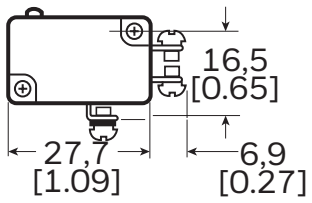


Figure 6. Solder

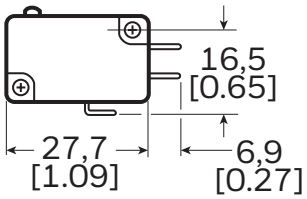
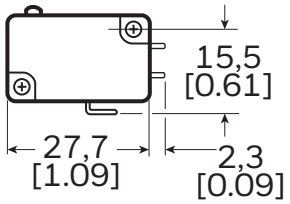


Figure 7. Short Solder



MICRO SWITCH
V3 SERIES

STANDARD LEVER OPTIONS • DIMENSIONS

Figure 8. Straight Short Lever

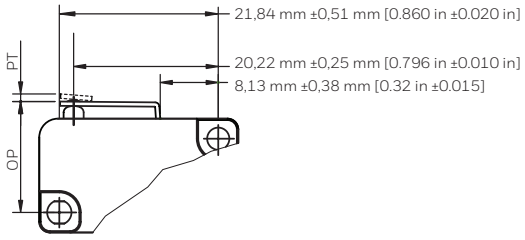


Figure 9. Standard Straight Lever

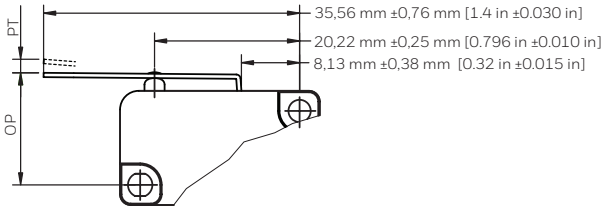


Figure 10. Long Straight Lever

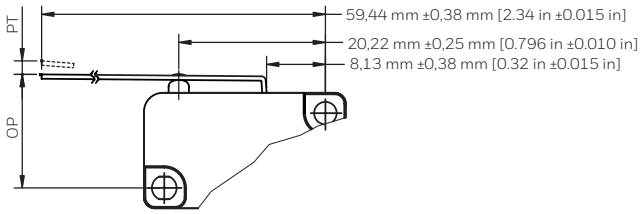


Figure 11. Simulated Roller Lever

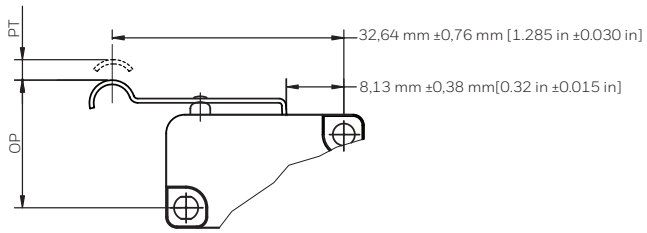


Figure 12. Short Roller Lever

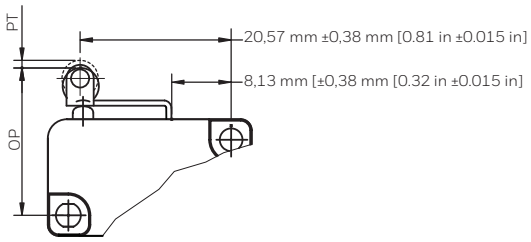
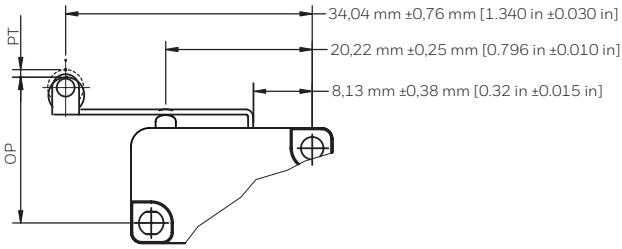
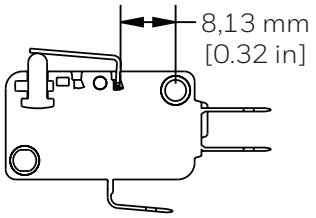


Figure 13. Roller Lever

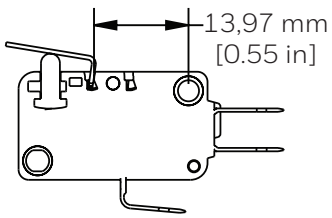


NOTE: These dimensions apply for the "X" lever position. For the "Y" lever position, please add 5,84 mm [0.230 in].

Position X



Position Y



HONEYWELL UNSEALED V BASIC PORTFOLIO

	V7	V15	V19
			
Target Market	Applications requiring precision, long term reliability, and design flexibility in electrical ratings	Cost sensitive applications requiring configurability in actuation, termination, and operating characteristics	Applications in major and small appliances or designs that require simple configurations
Differentiator	Offering a range of operating characteristics to achieve repeatable and precise switch actuation while also providing the widest selection of actuating levers, electrical ratings, temperature ranges and materials selections	Industry standard switch footprint and global certifications ideal for "low-cost-of-failure" applications	Provides balance between cost and performance in high-volume switch applications
Options	Thermoplastic housings coupled with premium internal materials and a wide range of external actuators (some customizable) make the V7 Series the smart choice where reliability and repeatablity are required	Multiple contact material options: Contact variants to enable design and regulation compliance	Multiple RAST standard terminal options for optimizing automated manufacturing processes

RELATED DOCUMENTATION

- V Basics Range Guide
- Applying Precision Switches
- V7 Datasheet
- V15 Datasheet
- V19 Datasheet
- Basic Switch Comparisons

FOR MORE INFORMATION

Honeywell Sensing and Safety Technologies services its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing, or the nearest Authorized Distributor, visit sps.honeywell.com/ast or call:

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Honeywell
Sensing and Safety Technologies
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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.**

While Honeywell may provide application assistance personally, through our literature and the Honeywell web site, it is buyer's sole responsibility to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this writing. However, Honeywell assumes no responsibility for its use.

⚠ WARNING
IMPROPER INSTALLATION

- Consult with local safety agencies and their requirements when designing a machine-control link, interface and all control elements that affect safety.
- Strictly adhere to all installation instructions.

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.

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