

005431

TW Series Issue 3

Datasheet



DESCRIPTION

Honeywell MICRO SWITCH TW Series toggle switches are military qualified to MIL-83731 specifications for sealed and unsealed toggle switches. Quality construction features include an available bonded seal between the toggle lever and bushing for those applications where a sealing-related failure cannot be tolerated.

The durable design of the TW Series toggle is well-suited for many military, aerospace and other demanding applications where space behind the panel is limited. These applications include environments where the panels are subjected to mechanical shock, vibration, dust, splashing or hose-directed water, and temperature extremes.

MICRO SWITCH TW toggles feature a miniature militarygrade design with environmental sealing capabilities and can be configured with a large selection of circuitries, electrical terminations, lever and bushing designs, and contact material options to satisfy a diverse range of applications.

VALUE TO CUSTOMERS

- MIL-DTL-83731 qualified switches available to meet military specifications
- Environmental sealing availability enables switches to withstand many demanding indoor and outdoor applications
- Miniature size (small footprint) for applications where behind-the-panel space is at a minimum
- 2- and 3-position, maintained and momentary toggle action to meet circuit and actuator requirements

FEATURES

- MIL-DTL-83731 qualified switches are available to meet military/aerospace specifications
- 1- and 2- pole options along with 2- and 3-position, maintained and momentary toggle action
- Wide temperature range: -65 $^{\circ}$ C to 71 $^{\circ}$ C [-85 $^{\circ}$ F to 160 $^{\circ}$ F]
- 1/4 in and 15/32 in bushing diameters
- Standard, locking, & colored paddle levers
- Optional lever locks (pull-to-unlock) require two separate actions to actuate
- Three popular termination options: screw, solder, and IWTS (Integrated Wire Termination System)
- Silver alloy or gold-plated contacts
- Electrical endurance of 20,000 cycles at full load

POTENTIAL INDUSTRIAL APPLICATIONS

- Military and commercial aircraft and helicopters
- Aviation ground support equipment
- Military land vehicles (track and wheeled vehicles)
- · Industrial machinery and construction equipment
- Process control

DIFFERENTIATION

- Miniature size saves space and weight
- Variety of terminations, circuitries, and lever options for a number of applications

PORTFOLIO

In addition the the TW Series, Honeywell offers six series of MICRO SWITCH toggle switches including the TL Series, NT Series, TS Series, ET Series, and AT Series.

Table 1. Specifications

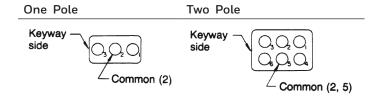
Characteristic	Parameter
Description	miniature military-grade toggle switch
Sealing	qualified to MIL-DTL-83731
Operating temperature	-65 °C to 71 °C [-85 °F to 160 °F]
Actuators	standard, locking, special design, paddle
Action	2- or 3- position; momentary and maintained
Mounting	bushing 15/32 in (0.47 in) Ø; 1/4 in (0.25 in) Ø
Circuitry	SPDT, DPDT, SPST, DPST
Terminations	IWTS, solder (T and T2), quick connect (H58)
Contacts	fine silver or gold-plated
Amp rating	0.1 A to 5.0 A @ 0.5 Vdc to 28 Vdc
Ampracing	0.1 A to 5.0 A @ 0.5 Vac to 115 Vac
Approvals	UL, qualified to MIL-DTL-83781
Measurement	49,78 mm H x 14,61 mm W x 14,61 mm D [1.96 in H x 0.575 in W x 0.575 in D]

Table 2. Electrical Ratings (in amperes)

Volts	Resistive	Inductive	Lamp
30 Vdc	5	2	1
115 Vac	5	2	1
UL Code 117	5 A @ 125 Vac		

TERMINAL CIRCUIT IDENTIFICATION

Terminal identifications are referred to in the order guides to indicate which circuits are made in each toggle position (i.e., 1-2 refers to circuit closure through terminals 1 and 2).



TERMINALS

In addition to the solder terminal listings in the order guides, IWTS (Integrated Wire Termination System) and quick connection versions are also available.

IWTS provides a reliable, serviceable unit and promotes maintainability since wiring bundles need not be disturbed. Leads are quickly and easily assembled or removed with an insert-extract tool. A unique three-rib (grommet style) elastomer seal protects the lead connections without potting. There are no exposed metal terminals. Versions available that will accept No. 20 wire with MS39029/1-101 contact pins. Connections are resistant to shock, vibration, and high pull-out force.

SPECIAL CIRCUITRIES

Catalog listings with -10, -50, and -70 suffix numbers, as shown in the order guides, have special "on-on-on" circuits, as illustrated below.

-10 CIRCUITRY

No of poles	Keyway Side Maint.	Center Maint.	Opposite Keyway	
	Position	Position	Maint. Position	
2	3 2 1 6 5 4	3 2 1 6 5 4	3 2 6 5 4	

-50 CIRCUITRY

No of poles	Keyway Side Maint. Position	Center Maint. Position	Opposite Keyway Maint. Position	
2	3 2 1	3 2 1	3 2 1 6 5 4	

-70 CIRCUITRY

No of poles	Keyway Side Maint.	Center Maint.	Opposite Keyway	
	Position	Position	Maint. Position	
2	3 2 1	3 2 1	3 2 1 6 5 4	

TW SERIES TWO-POSITION ORDER GUIDE

Table 3. Two-Position TW Series with 15/32 in Bushing

		Circuits Made with Toggle At:		Sealed St	Sealed Standard Toggle		Pull-to-Unlock Toggle	
No. of poles	Terminals	Keyway Position	Opposite Keyway	Catalog Listing	Military Number	Add Suffix to Standard Toggle Listing ^D	Military Number**	Add Paddle Color Suffix to _
1	solder	OFF	2-3 ON	11TW1-2	MS27718-22-1	D, F, G	MS27720-22-1	11TW19-2_
	solder	2-1 ON	2-3 ON	11TW1-3	MS27718-23-1	D, F, G	MS27720-23-1	11TW19-3_
	solder	2-1 ON*	2-3 ON	11TW1-8	MS27718-26-1	F	MS27720-26-1	11TW19-8_
	IWTS	2-1 ON	2-3 ON	111TW1-3	-	D, F, G	-	-
	ITWS	2-1 ON*	2-3 ON	111TW1-8	_	F	_	_
2	solder	OFF	2-3, 5-6 ON	12TW1-2	MS27719-22-1	D, F, G	MS27721-22-1	12TW19-2_
	solder	2-1, 5-4 ON	2-3, 5-6 ON	12TW1-3	MS27719-23-1	D, F, G	MS27721-23-1	12TW19-3_
	solder	2-1, 5-4 ON*	2-3, 5-6 ON	12TW1-8	MS27719-26-1	F	MS27721-26-1	12TW19-8_
	IWTS	2-1, 5-4 ON	2-3, 5-6 ON	112TW1-3	_	D, F, G	_	_
	IWTS	2-1, 5-4 ON*	2-3, 5-6 ON	112TW1-8	_	F	_	_

^{*} These positions are momentary. All others are maintained.

Table 4. Two-Position TW Series with 1/4 in Bushing

		Circuits Made	with Toggle At:	Sealed Standard Toggle		
No. of poles	Terminals	Keyway Position	Opposite Keyway	Catalog Listing	Military Number	Catalog Listing
1	solder	OFF	2-3 ON	1TW1-2	MS27716-22-1	1TW101-2
	solder	2-1 ON	2-3 ON	1TW1-3	MS27716-23-1	1TW101-3
10 10 10 10 10 10 10 10 10 10 10 10 10 1	solder	2-1 ON*	2-3 ON	1TW1-8	MS27716-26-1	1TW101-8
2	solder	OFF	2-3, 5-6 ON	2TW1-2	MS27717-22-1	2TW101-2
	solder	2-1, 5-4 ON	2-3, 5-6 ON	2TW1-3	MS27717-23-1	2TW101-3
13 x 10 x	solder	2-1, 5-4 ON*	2-3, 5-6 ON	2TW1-8	MS27717-26-1	2TW101-8

^{*} These positions are momentary. All others are maintained.

PULL-TO-UNLOCK OPTION

When ordering pull-to-unlock toggle listings (See page 8 for configurations), add the suffix letter shown in the chart on page 11 to the standard toggle listing or the MS part number. For example, to order a 11TW1-2 pull-to-unlock toggle switch with the lever locked out of the center position,

^{**} Also add the appropriate suffix to the military number.

^{***} See page 8 for paddle lever colors

 $^{^{\}Delta}$ See page 8 for locking configurations.

add the letter \mathbf{D} (i.e., 11TW1-2 \mathbf{D} , MS27718-22-1 \mathbf{D})

TW SERIES THREE-POSITION ORDER GUIDE

Table 5. Three-Position TW Series with 15/32 in Bushing

		Circuits N	Made with	Toggle At:	Sealed St	andard Toggle	Pull-to-I	Jnlock Toggle	Colored Pad- dle Lever***
No. of poles	Term- inals	Keyway Position	Center Position	Opposite Keyway	Catalog Listing	Military Number	Add Suffix to Standard Toggle Listing ^D	Military Number**	Add Paddle Color Suffix to _
1	solder	2-1 ON	OFF	2-3 ON	11TW1-1	MS27718-21-1	ALL	MS27720-21-1	11TW19-1_
	solder	2-1 ON*	OFF	2-3 ON	11TW1-5	MS27718-31-1	E, F, K, L, M, N	MS27720-31-1	11TW19-5_
	solder	2-1 ON*	OFF	2-3 ON*	11TW1-7	MS27718-27-1	E, L, N	MS27720-27-1	11TW19-7_
	IWTS	2-1 ON	OFF	2-3 ON	111TW1-1	_	ALL	_	_
	IWTS	2-1 ON*	OFF	2-3 ON	111TW1-5	_	E, F, K, L, M, N	_	_
	IWTS	2-1 ON*	OFF	2-3 ON*	111TW1-7	_	E, L, N	_	_
2	solder	2-1, 5-4 ON	OFF	2-3, 5-6 ON	12TW1-1	MS27719-21-1	ALL	MS27721-21-1	12TW19-1_
	solder	2-1, 5-4 ON*	OFF	2-3, 5-6 ON	12TW1-5	MS27719-31-1	E, F, K, L, M, N	MS27721-31-1	12TW19-5_
	solder	2-1, 5-4 ON*	OFF	2-3, 5-6 ON*	12TW1-7	MS27719-27-1	E, L, N	MS27721-27-1	12TW19-7_
	IWTS	2-1, 5-4 ON	OFF	2-3, 5-6 ON	112TW1-1	_	ALL	_	_
A STA	IWTS	2-1, 5-4 ON*	OFF	2-3, 5-6 ON	112TW1-5	_	E, F, K, L, M, N	_	-
	IWTS	2-1, 5-4 ON*	OFF	2-3, 5-6 ON*	112TW1-7	_	E, L, N	_	_

^{*} These positions are momentary. All others are maintained.

Table 6. Three-Position TW Series with 1/4 in Bushing

	Circui	its Made with Too	ggle At:	Unealed Sta	ndard Toggle	Sealed Standard Toggle	
No. of poles			Opposite Keyway	Catalog Listing	Military Number	Catalog Listing	
1	2-1 ON	OFF	2-3 ON	1TW1-1	MS27716-21-1	1TW101-1	
	2-1 ON*	OFF	2-3 ON	1TW1-5	MS27716-31-1	1TW101-5	
100 mm m m m m m m m m m m m m m m m m m	2-1 ON*	OFF	2-3 ON*	1TW1-7	MS27716-27-1	1TW101-6	
2	2-1, 5-4 ON	OFF	2-3, 5-6 ON	2TW1-1	MS27717-21-1	2TW101-2	
	2-1, 5-4 ON*	OFF	2-3, 5-6 ON	2TW1-5	MS27717-31-1	2TW101-3	
	2-1, 5-4 ON*	OFF	2-3, 5-6 ON*	2TW1-7	MS27717-26-1	2TW101-8	

^{*} These positions are momentary. All others are maintained.

PULL-TO-UNLOCK OPTION

When ordering pull-to-unlock toggle listings (See page 8 for configurations), add the suffix letter shown in the chart on page 11 to the standard toggle listing or the MS part number. For example, to order a 11TW1-7 pull-to-unlock toggle switch with the lever locked in the center position, add the letter \mathbf{E} (i.e., 11TW1-7 \mathbf{E} , MS27720-27-1 \mathbf{E})

^{**} Also add the appropriate suffix to the military number.

^{***} See page 8 for paddle lever colors

 $^{^\}Delta\,\text{See}$ page 8 for locking configurations.

Table 7. TW Series Switches with Special Circuitries

All two-pole, three-position TW switches are available with special "on-on-on" **-10**, **-50**, **-70** circuitry options as shown below.

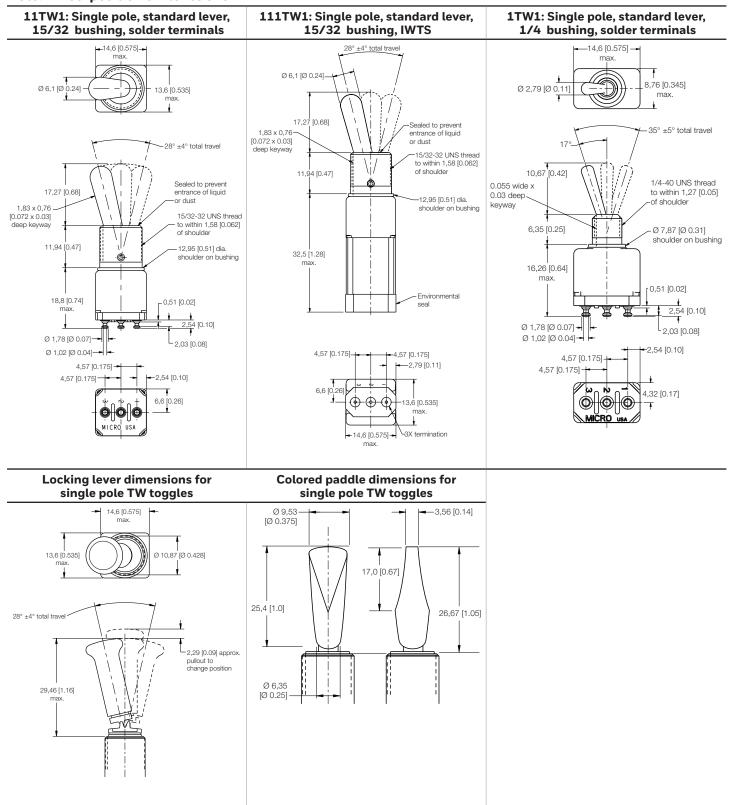
	Circuits Made with Toggle At: Sealed Standard			dard Toggle	Unsealed Standard Toggle	Sealed Paddle Lever		
No. of poles	Terminals	Keyway Position	Center Position	Opposite Keyway	15/32 Bushing Catalog Listing	1/4 Bushing Catalog Listing	1/4 Bushing Catalog Listing	15/32 Bushing Catalog Listing***
2	solder	2-1, 5-4 ON	2-1, 5-6 ON	2-3, 5-6 ON	12TW1- 10	2TW101- 10	2TW1- 10	12TW19- 10_
	solder	2-1, 5-4 ON*	2-1, 5-6 ON	2-3, 5-6 ON	12TW1- 50	2TW101- 50	2TW1- 50	12TW19- 50_
STAN IN	solder	2-1, 5-4 ON*	2-1, 5-6 ON	2-3, 5-6 ON*	12TW1- 70	2TW101- 70	2TW1- 70	12TW19- 70_

^{*} These positions are momentary. All others are maintained.

^{***} Add color suffix from Table 8 on page 11.

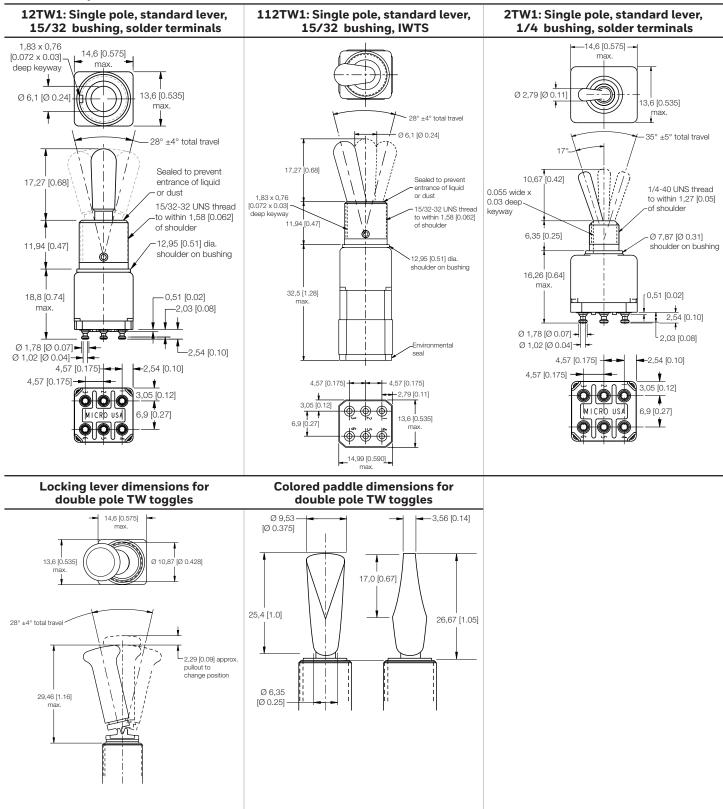
MICRO SWITCH TW SERIES 1-POLE STANDARD ACTUATOR OPTIONS, TERMINALS, & DIMENSIONS

Note: Three-position switches shown



MICRO SWITCH™ TW SERIES 2-POLE STANDARD ACTUATOR OPTIONS, TERMINALS, & DIMEN-**SIONS**

Note: Three-position switches shown



MICRO SWITCH TW SERIES LOCKING CONFIGURATIONS

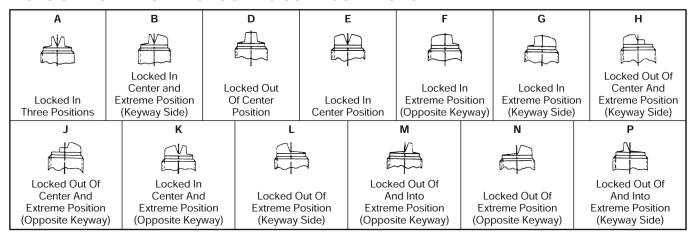


Table 8. Paddle Lever Colors

Color Suffix	Paddle Lever Color
A001	White
A002	Black
A003	Blue
A004	Red
A005	Green
A006	Orange
A007	Light Grey

ADDITIONAL MATERIALS

The following associated literature is available on the Honeywell web site at sensing.honeywell.com:

- Product installation instructions
- Product range guide
- Product application-specific information
 - Flight deck toggle switches
 - Sensors and switches in front loaders
 - Sensors and switches in mobile cranes
 - Sensors and switches in oil rig applications

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