Honeywell

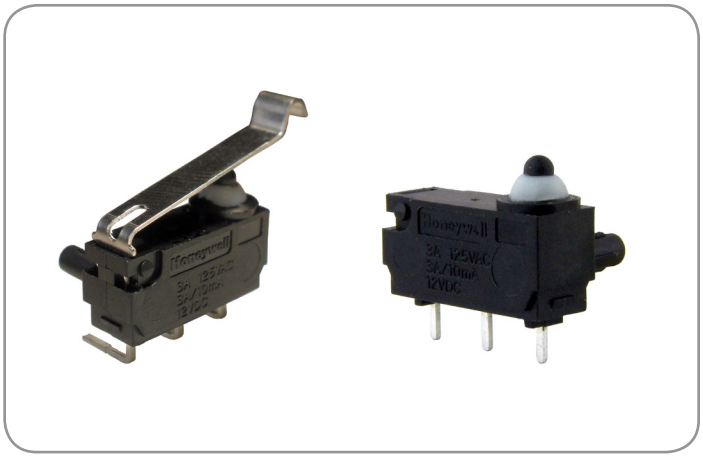
MICRO SWITCH Sealed Subminiature Basic Switches

ZD Series

004988

Issue 4

Datasheet



DESCRIPTION

Honeywell's MICRO SWITCH ZD Series is a sealed subminiature snap-action switch. Although small in size, the ZD Series is rated for controlling electrical loads ranging from logic-level (low current, low voltage) to limited power-duty switching (up to 3 A/125 Vac).

The switch when provided with integral wire leads is sealed to IP67 and is suitable for applications where the switch assembly would be exposed to liquids or particulate contaminates in the environment.

A wide variety of stainless steel levers are available, and when combined with the subminiature package size, can adapt the switch for many different applications. The ZD Series is certified to UL, cUL, ENEC, and CQC for worldwide use.

DIFFERENTIATION

- The IP67-rated ealed switch is designed to operate in a variety of demanding applications, reducing the challenge of harsh environments
- Current carrying capacity, up to 3 A, allows for a solution in many applications where space is a premium
- Switch package designed to accommodate demanding temperature requirements, up to 85 °C [185 °F]

FEATURES

- Subminiature package size
- SPDT, SPNC, or SPNO switch options
- Power-duty switching with silver contacts or logic-level (low voltage and milliamperes) with gold-plated contacts
- Pre-leaded wires sealed to IP67
- Built with an integral sealed pin plunger
- Various styles of levers and variety of terminations
- Integral mounting pins (pillars) on the switch housing simplify and reduce installation time

POTENTIAL APPLICATIONS

- Electric window control for automobiles
- Automobile seat belt latch detection
- Engine hood or trunk latch detection
- Vehicle door latch detection
- Vehicle mounted wheelchair lifts

VALUE TO CUSTOMERS

- Well suited for power-duty and logic-level loads
- Performs in wet, dirty, and dusty environments
- Enhances safety through enablement of monitoring and guidance capabilities that improve productivity of operators

PORTFOLIO

The ZD Series of subminiature basic switches are a part of a strong offering of submins including ZM/ZM ZX, and ZW Series switches.

MICRO SWITCH Sealed Subminiature Basic Switches, ZD Series

Table 1. Specifications

Characteristic	ZD20S Series (Logic Level)	ZD30S Series (Power Duty)
Circuitry	SPDT, SPNC, SPNO *(Note: SPNC and SPNO prewired only)*	SPDT, SPNC, SPNO *(Note: SPNC and SPNO prewired only)*
Operating force	130 g max. @ plunger	130 g max. @ plunger
Termination	PCB, solder, prewired	PCB, solder, prewired
Sealing	IP67 (prewired), IP00 for exposed terminals	IP67 (prewired), IP00 for exposed terminals
Actuators (levers 300 series stainless steel)	pin plunger, flat lever, formed lever, long formed leaf lever, simulated roller lever, special lever	pin plunger, flat lever, formed lever, long formed leaf lever, simulated roller lever, special lever
Agency certification	UL, cUL, ENEC, CQC, RoHS compliant	UL, cUL, ENEC, CQC, RoHS compliant
Operating temperature (manufacturer rated)	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]
Mechanical endurance (cycles)	500,000 min. @ 120 cycles per min. max.	500,000 min. @ 120 cycles per min. max.
Electrical endurance (cycles)	Up to 500,000 @ 30 cycles/minute max.	Up to 100,000 @ 30 cycles/minute max.
Switch resistance (initial)	100 mΩ max.	100 mΩ max.
Insulation resistance (initial)	100 MΩ min. (500 Vdc for one minute)	100 MΩ min. (500 Vdc for one minute)
Dielectric strength (initial) *(between live parts and ground)*	500 VRMS for one minute ≤ 0.5 mA leakage current	500 VRMS for one minute ≤ 0.5 mA leakage current
Plunger seal	silicone	silicone
Contact material	gold-plated silver	silver
Housing material	case, polyamide (nylon); cover, PBT polyester	case, polyamide (nylon); cover, PBT polyester

Note: Refer to engineering drawing for additional information.

Table 2. Electrical Ratings

Switch option	CQC (Asia-Pacific) Per GB 15092-1	ENEC (Europe) Per IEC 61058-1	UL, cUL (Americas) UL 61058-1, File 12252
ZD20S Series (Gold-plated contacts)	0.01 A, 12 Vdc, 500,000 cycles	0.01 A to 0.1 A, 12 Vdc 100,000 cycles	0.01 RA to 0.1 RA, 12 Vdc 10,000 cycles
ZD30S Series (Silver contacts)	3 A, 12 Vdc, 100,000 cycles 3 A, 125 Vac, 10,000 cycle	3 A, 12 Vdc, 100,000 cycles 3 A, 125 Vac, 10,000 cycles	3 RA, 12 Vdc, 100,000 cycles 3 RA 125 Vac, 10,000 cycles

Note: UL, cUL; CQC and ENEC “use temperature”; 0 °C to 55 °C [32 °F to 131 °F].

MICRO SWITCH Sealed Subminiature Basic Switches, ZD Series

PRODUCT NOMENCLATURE

ZD — Switch Type
ZD Series Subminiature Basic Switch

20 — Current Rating

20	10 mA, 12 Vdc
30	3 A 12 Vdc 3 A 125 Vac

S — Operating Force[3] (at pin plunger)

S	130 g max.

10 — Terminal Type

	Wired (blank)[4]
10	Solder (2,5 mm x 1,70 mm)
20	PCB, straight (0,6 mm x 2,5 mm)
50	PCB, right angle
60	PCB, left angle
70	Long solder[7]
99	SPECIAL[2]

A — Actuator Type

A	Pin plunger
B	Special formed lever, 13,7 mm
C	Straight lever, 15 mm
H	Sim. roller lever, 18,6 mm
J	Long straight lever, 23 mm
K	Sim. roller lever, 14,4 mm
M	Special formed lever, 15 mm
N	Sim. roller lever, 17 mm
P	Long formed leaf lever, 19 mm
S	SPECIAL[2]

0 — Circuitry

0	SPDT
3	SPNO[5]
4	SPNC[5]

3 — Pillar

4	No pillar
5	Left pillar
6	Right pillar
7	No pillar, w/ mounting hole tab
9	Short pillar & mounting hole
12	Left & right pillar
99	SPECIAL[2]

0 — Wire Size

	Terminal option (blank)
E	20 AWG (standard)
F	22 AWG
G	24 AWG
H	26 AWG

0 — Wire Type[6]

	Terminal option (blank)
A	UL1007 (standard)
C	UL1430
D	UL1061
F	AVSS[8] (automotive)

– Special Designator

A special designator is used to indicate non-standard feature, such as a special actuator, wire color, wire length, connector, etc. This code will consist of three alphanumeric characters.
R: indicates wire exit opposite plunger
L: indicates wire exit plunger end

NOTES:
[1] Not all combinations of model code are available. Please contact your Honeywell provider/representative for assistance.
[2] Terminal Type "99", Actuator Type "S", and/or Pillar/Travel Type "99" designates a special and requires a special designation at the end of the listing.
[3] Operate force is measured at the plunger. Adding an actuator/lever will change the operate force. See page 6 for operate force.
[4] Standard wire exit is out the bottom of the switch. No special designator is necessary for this wire exit direction.
[5] SPNO and SPNC are only available if termination type is wired.
[6] Standard wire length is 500 mm [19.5 in] long. Other lengths available upon request.
[7] Long solder terminals do not have UL or ENEC approvals.
[8] Switches with AVSS wire do not have UL approvals.

MICRO SWITCH Sealed Subminiature Basic Switches, ZD Series

O.F. • Operating force
R.F. • Release force
P.T. • Pretravel
O.T. • Overtravel
D.T. • Differential travel
O.P. • Operating position

PRODUCT SPECIFICATIONS AND LISTINGS

Contact your Honeywell rep or distributor for additional listings

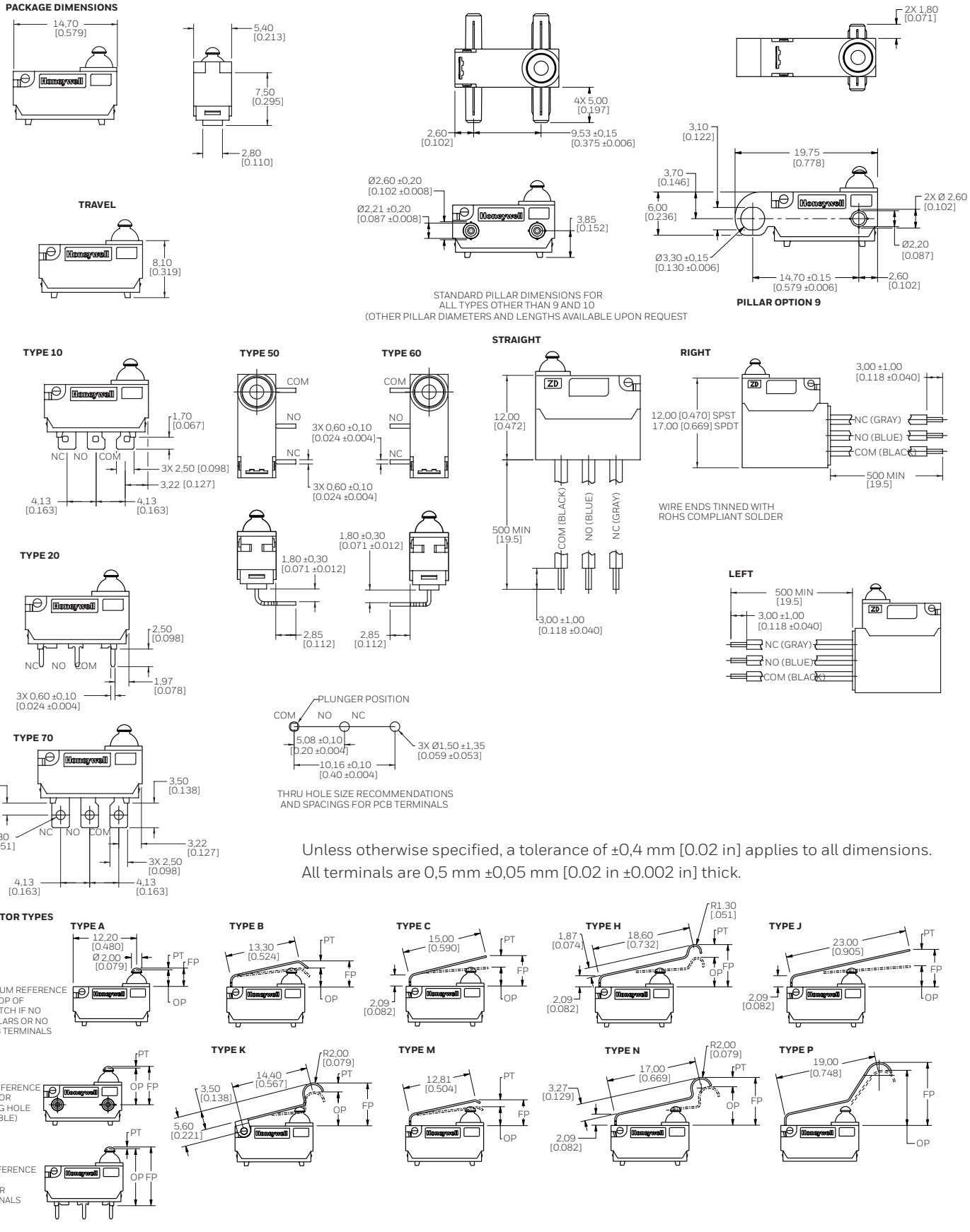
	Catalog Listing	Actuator	Circuitry/ Contact Material	Elect. Rating Spec. (page 4)	Termination	Operate Force max. N [Gm]	Release Force min. N [Gm]	Free Position max. mm [in] No hole or pillar, from top of switch (see page 8)
	**ZD20S20A04**	Pin plunger	SPDT/ Gold Plated	0.1 A	PCB	1,27 [130]	0,34 [35]	–
	ZD20S20A05	Pin plunger	SPDT/ Gold Plated	0.1 A	PCB	1,27 [130]	0,34 [35]	–
	ZD20S20A06	Pin plunger	SPDT/ Gold Plated	0.1 A	PCB	1,27 [130]	0,34 [35]	–
	ZD20S20A04	Pin plunger	SPDT/ Gold Plated	0.1 A	PCB	1,27 [130]	0,34 [35]	–
	ZD20S20A05	Pin plunger	SPDT/ Gold Plated	0.1 A	PCB	1,27 [130]	0,34 [35]	–
	ZD20S20A06	Pin plunger	SPDT/ Gold Plated	0.1 A	PCB	1,27 [130]	0,34 [35]	–
	ZD30S20A04	Pin plunger	SPDT/ Silver	3 A	PCB	1,27 [130]	0,34 [35]	–
	ZD30S20A06	Pin plunger	SPDT/ Silver	3 A	PCB	1,27 [130]	0,34 [35]	–
	ZD30S20A06	Pin plunger	SPDT/ Silver	3 A	PCB	1,27 [130]	0,34 [35]	–
	ZD30S20A04	Pin plunger	SPDT/ Silver	3 A	PCB	1,27 [130]	0,34 [35]	–
	ZD30S20A05	Pin plunger	SPDT/ Silver	3 A	PCB	1,27 [130]	0,34 [35]	–
	ZD30S20A06	Pin plunger	SPDT/ Silver	3 A	PCB	1,27 [130]	0,34 [35]	–
	**ZD30S60N05**	Simulated roller leaf lever	SPDT/ Silver	3 A	PCB (left side)	1,96 [200]	0,49 [50]	–
	ZD30S60C05	Straight leaf lever	SPDT/ Silver	3 A	PCB (left side)	1,91 [195]	0,54 [55]	–

O.F. • Operating force
R.F. • Release force
P.T. • Pretravel
O.T. • Overtravel
D.T. • Differential travel
O.P. • Operating position

Free Position max. mm [in] from mounting hole or pillar (see page 8)	Free Position max. mm [in] from base for PCB terminal (see page 8)	Operate point mm [in] No hole or pillar, from top of switch (see page 8)	Operate point mm [in] from mounting hole or pillar (see page 8)	Operate point mm [in] from base for PCB terminals (see page 8)	P.T. max. mm [in]	O.T. min. mm [in]	D.T. max. mm [in]
–	11,15 [0.44]	–	–	10,55 ±0,2 [0.42 ±0.008]	0,80 [0.03]	0,80 [0.03]	0,3 [0.01]
7,35 [0.29]	11,15 [0.44]	–	6,75 ±0,2 [0.27 ±0.008]	10,55 ±0,2 [0.42 ±0.008]	0,80 [0.03]	0,80 [0.03]	0,3 [0.01]
7,35 [0.29]	11,15 [0.44]	–	6,75 ±0,2 [0.27 ±0.008]	10,55 ±0,2 [0.42 ±0.008]	0,80 [0.03]	0,80 [0.03]	0,3 [0.01]
–	11,15 [0.44]	–	–	10,55 ±0,2 [0.42 ±0.008]	0,80 [0.03]	0,80 [0.03]	0,3 [0.01]
7,35 [0.29]	11,15 [0.44]	–	6,75 ±0,2 [0.27 ±0.008]	10,55 ±0,2 [0.42 ±0.008]	0,80 [0.03]	0,80 [0.03]	0,3 [0.01]
7,35 [0.29]	11,15 [0.44]	–	6,75 ±0,2 [0.27 ±0.008]	10,55 ±0,2 [0.42 ±0.008]	0,80 [0.03]	0,80 [0.03]	0,3 [0.01]
–	11,15 [0.44]	–	–	10,55 ±0,2 [0.42 ±0.008]	0,80 [0.03]	0,80 [0.03]	0,3 [0.01]
7,35 [0.29]	11,15 [0.44]	–	6,75 ±0,2 [0.27 ±0.008]	10,55 ±0,2 [0.42 ±0.008]	0,80 [0.03]	0,80 [0.03]	0,3 [0.01]
7,35 [0.29]	11,15 [0.44]	–	6,75 ±0,2 [0.27 ±0.008]	10,55 ±0,2 [0.42 ±0.008]	0,80 [0.03]	0,80 [0.03]	0,3 [0.01]
–	11,15 [0.44]	–	–	10,55 ±0,2 [0.42 ±0.008]	0,80 [0.03]	0,80 [0.03]	0,3 [0.01]
7,35 [0.29]	11,15 [0.44]	–	6,75 ±0,2 [0.27 ±0.008]	10,55 ±0,2 [0.42 ±0.008]	0,80 [0.03]	0,80 [0.03]	0,3 [0.01]
7,35 [0.29]	11,15 [0.44]	–	6,75 ±0,2 [0.27 ±0.008]	10,55 ±0,2 [0.42 ±0.008]	0,80 [0.03]	0,80 [0.03]	0,3 [0.01]
14,40 [0.57]	18,20 [0.72]	–	17,70 ±0,70 [0.70 ±0.03]	21,50 ±0,70 [0.85 ±0.03]	4,40 [0.17]	1,45 [0.06]	0,5 [0.02]
10,70 [0.42]	14,50 [0.57]	–	7,40 ±0,2 [0.29 ±0.01]	11,20 ±0,2 [0.44 ±0.01}	3,85 [0.15]	1,35 [0.05]	0,5 [0.02]

DIMENSIONS

Figure 1. ZD Dimensions



Unless otherwise specified, a tolerance of ±0,4 mm [0.02 in] applies to all dimensions. All terminals are 0,5 mm ±0,05 mm [0.02 in ±0.002 in] thick.

Table 3. Operating Characteristics

Catalog Listing	Operate Force max. (g)	Release Force min. (g)	Free Position max. (mm) (no hole or piol-lar)	Free Position max. (mm) (from hole or pillar)	Free Position max. (mm) (from base)	Operate Point (mm) (no hole or piollar)	Operate Point (mm) (from hole or pillar)	Operate Point (mm) (from base)	Pretravel max. (mm)	Overtravel min. (mm)	Differential Travel max. (mm)
ZD - - S - - A *	130	35	3,65	7,35	11,15	3,05 ±0,2	6,75 ±0,2	10,55 ±0,2	0,80	0,80	0,3
ZD - - S - - B *	225	60	5,60	9,30	13,10	3,50 ±0,6	7,20 ±0,6	11,0 ±0,6	2,50	0,80	0,4
ZD - - S - - C *	195	55	7,00	10,70	14,50	3,70 ±0,2	7,40 ±0,2	11,20 ±0,2	3,85	1,35	0,5
ZD - - S - - H *	160	45	10,10	13,80	17,60	6,20 ±0,8	9,90 ±0,8	13,7 ±0,2	4,80	1,65	0,7
ZD - - S - - J *	150	35	7,80	11,50	15,30	4,50 ±0,7	8,20 ±0,7	12,0 ±0,7	4,00	2,00	1,0
ZD - - S - - K *	110	9	8,80	12,50	16,30	7,50 ±0,5	11,20 ±0,5	15,0 ±0,5	1,45	1,25	0,4
ZD - - S - - M *	235	65	7,20	9,20	13,00	3,40 ±0,45	7,10 ±0,45	10,9 ±0,45	3,00	0,80	0,4
ZD - - S - - N *	200	50	10,70	14,40	18,20	14,00 ±0,70	17,7 ±0,70	21,50 ±0,70	4,40	1,45	0,5
ZD - - S - - P *	180	35	15,30	19,00	22,80	11,70 ±1,50	15,4 ±1,5	19,20 ±1,5	5,10	0,90	0,7

ADDITIONAL MATERIALS

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

- Product installation instructions
- Product range guide
- Product nomenclature tree
- Product application-specific information
  - Application note: Sensors and switches for potential HVAC/R applications
  - Application note: Sensors and switches for potential medical applications
  - Application note: Watertight switches in transportation applications
  - Technical bulletin: Applying precision switches
  - Technical bulletin: Low energy switch guide

⚠ 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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