# Honeywell

# **MICRO SWITCH Miniature Precision Limit Switches**

002381

914CE Series Issue 9

**Datasheet** 



## **DESCRIPTION**

All MICRO SWITCH 914CE Series miniature precision switches incorporate fluorocarbon diaphragm sealing to provide reliable protection, meeting NEMA 1, 2, 3, 3R, 4, 6, 6P, and 13, as well as IP66, IP67, and IP68 requirements. Versions with a boot seal also meet NEMA 12 requirements (dust, falling dirt, liquid media with solid contaminates). The cable or connector and basic switch terminals are encapsulated in an epoxy sealant, offering excellent resistance in harsh environments. For low temperature applications (down to -40 °C, -40 °F), CE Series switches can be supplied with low temperature seals and lubricant.

The CE Series switches are rugged and versatile switches which can be applied indoors in many harsh factory floor applications, as well as on outdoor equipment in extreme temperatures. A full range of actuators are available, including pin plungers, roller plungers, side rotary, multi-directional wire, and manually operated. The switches are also available with the industry standard, M12 micro-change 4-pin connector. MICRO SWITCH 914CE products meet North American, cURus standards, as well as European CE requirements.

# **VALUE TO CUSTOMERS**

- Big performance in a small package
- Delivers consistent performance in many demanding environments where petroleum, synthetic, or water based fluids are present
- Product variation within defined nomenclature

### **FEATURES**

- Rugged, miniature construction means minimal real estate on equipment
- NEMA 1, 2, 3, 3R, 4, 6, 6P, 12 (boot seal), 13, and IP66/67/68 environmental sealing
- Pre-leaded (UL cable) or supplied with a M12 four-pin connector
- Wide selection of actuators and cable length variations with side and bottom exit cable/connector options
- 25 mm mounting centers engineered with a MICRO SWITCH SM switch for consistent, precise actuation
- Well suited for up to 10 million actuation cycles (Up to 5 million actuation cycles for wobble actuators)
- Gang mounting capability to provide a multi-plunger limit switch
- Low temperature variants available for indoor and outdoor applications
- cURus, CE approvals for world-wide use

## **POTENTIAL APPLICATIONS**

- Machine tools
- Off-road equipment
- Material handling
- Dock locks and dock levelers
- Access and mobility solutions
- Textile machinery
- Robotics
- Packaging equipment
- Commercial appliances
- Print trade machinery
- Agricultural machinery

#### **DIFFERENTIATION**

- Diaphragm seal between the actuator and the switch cavity for high performance sealing
- CE Series incorporates a MICRO SWITCH SM basic switch for consistent, precise actuation
- Side exit termination for space constraints

## **PORTFOLIO**

Honeywell's MICRO SWITCH 914CE limit switch is part of a comprehensive offering of rugged and reliable limit switches. To view the entire product portfolio, click here.

**Table 1. Specifications** 

Characteristic	Parameter	
Description	compact enclosed limit switch	
Actuators	<ul> <li>Cross roller plunger (914CE3-)</li> <li>Top pin plunger with boot seal (914CE18-)</li> <li>Wobble (914CE20-)</li> <li>Side rotary</li> <li>Top adjusta</li> <li>Manually o</li> </ul>	er plunger (914CE2-) (914CE16-) able plunger (914CE19-) perated (914CE22-) g plunger (914CE66-)
Terminations	SJTO 4 x 0,75 mm² (18 AWG) cable Connector (dc), 4-pin male, M12 thread (-Q), (-Q2) Revised pin-connector (ac), 4-pin male, 1/2 in x 20 thread (-Q1)	out, see page 3
Switching options	SPDT, snap action contacts (1NC/1NO), Form C	
Sealing	IP66, IP67, IP68* NEMA 1, 2, 3, 3R, 4, 6, 6P, 12 (boot seal), 13	
Operating temperature	0 °C to 105 °C [32 °F to 221 °F]; optional -40 °C to 105 °C [-40 Side rotary: -40° C to 100 °C [-40 °F to 212 °F]	°F to 221°F]
Mechanical life	up to 10 million (up to 5 million for wobbles) cycles	
Thermal current	1 A	
Rated insulation voltage (Ui)	250 V	
Rated impulse withstand voltage (Uimp)	1.5 kV	
Short circuit protection device (SCPD)	Quick blow fuse suitable for rated current of switch	
Pollution degree	3	
Min. actuation speed	0.003 m/s	
Max. actuation speed	0.1 m/s	
Max. actuation frequency	ac – 200 Hz; dc – 20 Hz	
Shock	50 g – IEC 60068-2-27	
Vibration	10 g – IEC 60068-2-6	
Approvals	cURus, CE	
Conforming to standards	EN 60947-5-1; AC-14 D300, DC-13 R300 UL recognized to US and Canadian Requirements	

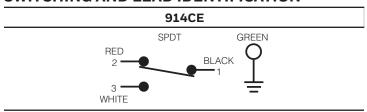
<sup>\*</sup>IP68 sealing submerged in one meter of water for 24 hours

# Table 2. Electrical Ratings (in amperes)

Model example	Contacts	Rating
914CE* - *	Silver contacts	A
914CE* - * <b>G</b>	Gold contacts	В
914CE* <b>-Q</b> , <b>-AQ</b> , <b>-AQ1</b> , <b>-Q2</b>	Silver contacts	C with 4-pin connector

Rating code		Make	Break
	240 Vac, ind.	1.2	0.2
	240 Vac, res.	5	5
А	28 Vdc, res.	3	3
	28 Vdc, ind.	3	3
	5 A, 1/10 HP, 125 Vac or 250 Vac	_	_
В	5-25 mA		
	5-50 Vdc	_	_
С	3 A, 125 Vac or 250 Vac	_	_

## SWITCHING AND LEAD IDENTIFICATION

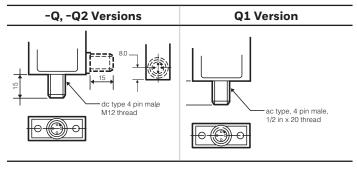


#### **PINOUTS**

Connector - (dc) (-Q)	Connector (dc) (-Q2)	Connector (ac) (-Q1)
2 = 1 3 = 1	2 = 3	NO 3 1 C

## **CONNECTOR VERSIONS**

The 914CE Series is available with a 4-pin, M12 size connector in both bottom and side exit versions.



## **MOUNTING**

MICRO SWITCH 914CE Series switches are mounted by using two M5 or #10 screws. The mounting holes are counter bored to keep the screw heads within the overall switch housing dimensions.

#### GANG MOUNT CAPABILITY

The housing on the 914CE Series has been designed to enable the user to build his own multiple plunger switch by gang mounting several switches. All pin plunger and roller plunger types are suitable for gang mounting. There is a 16 mm distance between the plungers. Both Series types are very versatile that even a lever-type version could be added at the end of the row.

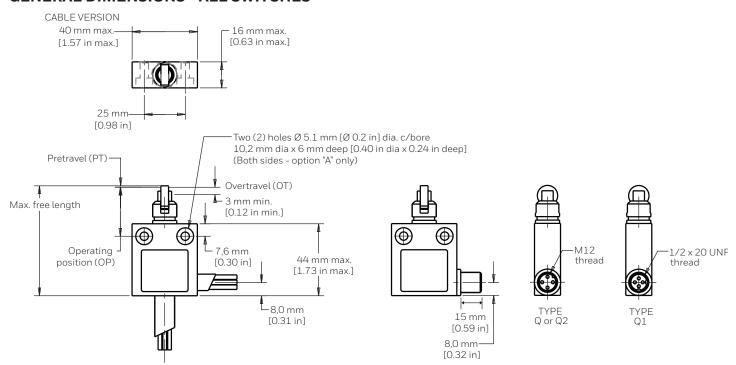
#### **BOTTOM EXIT OR SIDE EXIT ORIENTATION**

The CE Series has been designed with a pre-wired cable fitted in the bottom of the switch housing. Other variations are available with a side exit cable.

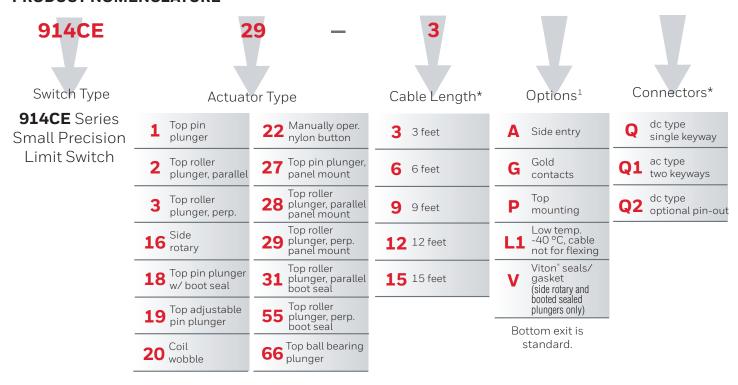
# **GOLD CONTACT VERSIONS**

For low energy applications, gold contact versions of the 914CE switches can be supplied upon request.

## **GENERAL DIMENSIONS • ALL SWITCHES**



## **PRODUCT NOMENCLATURE**



NOTE: not all combinations of model codes are available. Please contact your Honeywell provider/representative for assistance.

<sup>\*</sup>Select "Cable Length" or "Connectors".

<sup>&</sup>lt;sup>1</sup>More than one option may be permissible.

# **PRODUCT SPECIFICATIONS AND LISTINGS**

 ${\it Contact your Honeywell rep or distributor for additional listings}$ 

914CE1 • Pin Plu 914CE27 • Pin Plu	nger unger Panel Mount	Contacts	Elec Rating	Cable/ Connector Position	Free Posi- tion (FP)	Operating Position (OP)	Options	Listing
Ø10,0 mm [Ø0.39 in] OT PT FF		Silver	А	Bottom	17,5 mm [0.69 in]	15,7 mm [0.62 in]	-	914CE1-3
		Gold	В	Bottom	17,5 mm [0.69 in]	15,7 mm [0.62 in]	-	914CE1-3G
M10 X 1 METRIC THREAD————————————————————————————————————	Diff. travel • 0,1 mm [0.004 in]  READED LENGTH  Overtravel • 3,0 mm [0.118 in]  Oper. force • 12,2 N [2.75 in-lb]	Silver	А	Side	17,5 mm [0.69 in]	15,7 mm [0.62 in]	-	914CE1-3A
OT		Silver	А	Bottom	31,1 mm [1.23 in]	29,3 mm [1.15 in]	Panel mount	914CE27-3
		Silver	С	Bottom	17,5 mm [0.69 in]	15,7 mm [0.62 in]	dc-type, single keyway	914CE1-Q
		Silver	С	Bottom	17,5 mm [0.69 in]	15,7 mm [0.62 in]	ac-type, two keyways	914CE1-Q1
914CE18 • Boot S	sealed Pin Plunger	Contacts	Elec Rating	Cable/ Connector Position	Free Posi- tion (FP)	Operating Position (OP)	Options	Listing
		Silver	А	Bottom	26,7 mm [1.05 in]	24,9 mm [0.98 in]	_	914CE18-3
Ø7,0 mm BOOT SEAL [Ø0.28 in] PT	<b>Pretravel •</b> 1,8 mm [0.071 in]	Silver	А	Side	26,7 mm [1.05 in]	24,9 mm [0.98 in]	-	914CE18-3A
OP FP	<b>Diff. travel •</b> 0,1 mm [0.004 in] <b>Overtravel •</b> 3,0 mm [0.118 in]	Silver	А	Bottom	26,7 mm [1.05 in]	24,9 mm [0.98 in]	Fluorocarbon seals	914CE18-3V
	<b>Oper. force</b> • 22,2 N [5 in-lb]	Silver	С	Bottom	26,7 mm [1.05 in]	24,9 mm [0.98 in]	ac-type, two keyways	914CE18-Q1
		Silver	С	Side	26,7 mm [1.05 in]	24,9 mm [0.98 in]	ac-type, two keyways	914CE18- AQ1
914CE <mark>66 • Ball Bo</mark>	earing Plunger	Contacts	Elec Rating	Cable/ Connector Position	Free Posi- tion (FP)	Operating Position (OP)	Options	Listing
7,9 mm [0.31 in] DIA BALL BEARING	Pretravel • 1,8 mm [0.071 in]	Silver	А	Bottom	26,2 mm [1.03 in]	24,4 mm [0.96 in]		914CE66-3
OP FF	Diff. travel • 0,1 mm [0.004 in] Overtravel • 3,0 mm [0.118 in] Oper. force • 12,2 N [2.75 in-lb]							

914CE2 • Roller Plu 914CE28 • Roller Pl Mount	inger lunger Panel	Contacts	Elec Rating	Cable/ Connector Position	Free Posi- tion (FP)	Operating Position (OP)	Options	Listing
Ø12,4 mm [Ø0.49 in] PT		Silver	А	Bottom	30,3 mm [1.19 in]	28,5 mm [1.12 in]	_	914CE2-3
OP FP	Pretravel • 1.8 mm [0.071 in]	Gold	В	Bottom	30,3 mm [1.19 in]	28,5 mm [1.12 in]	-	914CE2-3G
		Silver	С	Bottom	30,3 mm [1.19 in]	28,5 mm [1.12 in]	ac-type, two keyways	914CE2-Q1
ROLLER Ø 12,4 mm x 4,7 mm Ø 0.48 in x 0.020 in]	oiff. travel • 0,1 mm [0.004 in]	Silver	С	Bottom	30,3 mm [1.19 in]	28,5 mm [1.12 in]	dc-type, single keyway	914CE2-Q
	<b>Oper. force</b> • 12,2 N [2.75 in-lb]	Silver	А	Side	30,3 mm [1.19 in]	28,5 mm [1.12 in]	-	914CE2-3A
OP FP		Silver	А	Bottom	44,3 mm [1.75 in]	42,5 mm [1.67 in]	Panel mount	914CE28-3
		Silver	С	Bottom	44,3 mm [1.75 in]	42,5 mm [1.67 in]	Panel mount, actype, two keyways	914CE28-Q1
914CE31 • Boot Sea	aled Roller Plunger	Contacts	Elec Rating	Cable/ Connector Position	Free Posi- tion (FP)	Operating Position (OP)	Options	Listing
ROLLER Ø 12,4 mm x 4,7 mm Ø 0.48 in x 0.020 in]		Silver	А	Bottom	36,2 mm [1.43 in]	34,4 mm [1.36 in]	-	914CE31-3
	retravel • 1,8 mm [0.071 in]	Silver	А	Bottom	36,2 mm [1.43 in]	34,4 mm [1.36 in]	Fluorocarbon seals	914CE31-3V
OP FP 0								

914CE3 • Cross Re 914CE29 • Cross I	oller Plunger Roller Panel Mount	Contacts	Elec Rating	Cable/ Connector Position	Free Posi- tion (FP)	Operating Position (OP)	Options	Listing
Ø12,4 mm [Ø0.49 in]		Silver	А	Bottom	30,3 mm [1.19 in]	28,5 mm [1.12 in]	-	914CE3-3
OT		Gold	В	Bottom	30,3 mm [1.19 in]	28,5 mm [1.12 in]	-	914CE3-3G
OP FP		Silver	А	Side	30,3 mm [1.19 in]	28,5 mm [1.12 in]	_	914CE3-3A
	<b>Pretravel •</b> 1,8 mm [0.071 in]	Silver	А	Bottom	44,3 mm [1.75 in]	42,5 mm [1.67 in]	Panel mount	914CE29-3
ROLLER Ø 12,4 mm x 4,7 mm Ø 0.48 in x 0.020 in]	<b>Diff. travel •</b> 0,1 mm [0.004 in] <b>Overtravel •</b> 3,0 mm [0.118 in]	Silver	С	Bottom	30,3 mm [1.19 in]	28,5 mm [1.12 in]	dc-type, single keyway	914CE3-Q
OT- M14 X 1 THREAD	<b>Oper. force •</b> 12,2 N [2.75 in-lb]	Silver	С	Bottom	30,3 mm [1.19 in]	28,5 mm [1.12 in]	ac-type, two keyways	914CE3-Q1
PT								

Note: part numbers are shown with 3 ft of cable. The -X indicates the number of feet of cable provided. 6-foot, 9-foot, and 12-foot lengths along with custom lengths, are also available.

914CE55 • Boot Se Plunger	ealed Cross Roller	Contacts	Elec Rating	Cable/ Connector Position	Free Posi- tion (FP)	Operating Position (OP)	Options	Listing												
ROLLER Ø 12,4 mm x 4,7 mm Ø 0.48 in x 0.020 in]		Silver	А	Bottom	36,2 mm [1.43 in]	34,4 mm [1.36 in]	_	914CE55-3												
OP FP	Pretravel • 1,8 mm [0.071 in]  Diff. travel • 0,1 mm [0.004 in]  Overtravel • 3,0 mm [0.118 in]  Oper. force • 22,2 N [5 in-lb]																			
914CE22 • Manua	ally Operated	Contacts	Elec Rating	Cable/ Connector Position	Free Posi- tion (FP)	Operating Position (OP)	Options	Listing												
NYLON BUTTON—  Ø26,4 mm —  [Ø1.04 in] PT	Bustuarial - 1.0 [0.071; ]	Silver	А	Bottom	29,2 mm [1.15 in]	27,4 mm [1.08]	23,9 mm [0.94 in] dia. button	914CE22-3												
Pretravel • 1,8 mm [0.071 in]  Diff. travel • 0,1 mm [0.004 in]  Overtravel • 3,0 mm [0.118 in]  Oper. force • 8,9 N [2 in-lb]																				
914CE19 • Adjusta	able Plunger	Contacts	Elec Rating	Cable/ Connector Position	Free Posi- tion (FP)	Operating Position (OP)	Options	Listing												
M4 CORROSION RESISTANT SCREW AND LOCKNUT		Silver	А	Bottom	Adjust.		-	914CE19-3												
FOT GG! PT	Pretravel • 1,8 mm [0.071 in]  Diff. travel • 0,1 mm [0.004 in]	Gold	В	Bottom	33,8 mm to 40,8	Adjust. 32 mm to	-	914CE19-3G												
OP [ADJUSTABLE]		Silver	А	Side	mm [1.33 in	39 mm [1.26 in to	_	914CE19-3A												
	<b>Oper. force •</b> 17,5 N [5 lb]	Silver	С	Bottom	to 1.61 in]	to 1.61 in]		1.54 in]	1.54 in]	1.54 in]	1.54 in]	1.54 in]	1.54 in]	1.54 in]	1.54 in]	1.54 in]	1.54 in]	1.54 in]	ac-type, two keyways	914CE19-Q1
914CE20 • Randor Wire Actuator	m Motion	Contacts	Elec Rating	Cable/ Connector Position	Free Posi- tion (FP)	Operating Position (OP)	Options	Listing												
OP————————————————————————————————————		Silver	А	Bottom	-	-	-	914CE20-3												
1000		Silver	А	Side	_	-	-	914CE20-3A												
Ø1.8 mm // // // // // // // // // // // //	<b>Oper. point •</b> 28 mm [1.10 in] max.	Silver	С	Bottom	-	-	dc-type, single keyway	914CE20-Q												
335.0 mm max. [13.98 mm max.]	Oper. force • 0,55 N [0.12 lb] max.																			

914CE16 • Side R	otary	Contacts	Elec Rating	Cable/ Connector Position	Free Posi- tion (FP)	Operating Position (OP)	Options	Listing
		Silver	А	Bottom	_	_	_	914CE16-3 <sup>1</sup>
PT PT		Silver	А	Side	-	-	_	914CE16-3A1
OT OT OT	Pretravel • 30° Diff. travel • 3°	Silver	С	Bottom	_	_	ac-type, two keyways	914CE16-Q1 <sup>1</sup>
Actuator shaft [0.74 in] [0.74 in]	Overtravel • 40° Oper. force • 0,34 Nm [3 in-lb]	Silver	С	Bottom	-	-	dc-type, single keyway	914CE16-Q1
[80.288 in]		Silver	С	Side	_	_	ac-type, two keyways	914CE16- AQ1 <sup>1</sup>

 $<sup>^{\</sup>rm 1}\,\mbox{Switch}$  operates on clockwise and counterclockwise rotation of lever shaft.

Note: part numbers are shown with 3 ft of cable. The -X indicates the number of feet of cable provided. 6-foot, 9-foot, and 12-foot lengths along with custom lengths, are also available.

Table 3. Levers for 914CE16 Series Side Rotary Switches

	Catalog Listing	Material	Rod/Roller Dia. mm [in]	Rod/Roller Width mm [in]	Roller Mounting
	Fixed 38,1	mm [1.5 in] ra	adius		
(4)	-	Rollerless	n/a	n/a	n/a
	LSZ51A	Nylon	19 [0.75]	6,35 [0.25]	Front
	LSZ51B	Steel	19 [0.75]	6,35 [0.25]	Front
	LSZ51C	Nylon	19 [0.75]	6,35 [0.25]	Back
	LSZ51D	Steel	19 [0.75]	6,35 [0.25]	Back
	LSZ51L	Ball bearing	19 [0.75]	6,35 [0.25]	Back
	LSZ51P	Nylon	19 [0.75]	12,7 [0.50]	Front
	Adjustable	38,1 mm to 8	39,0 mm [1.	5 in to 3.5 in	n] radius
	-	Rollerless	n/a	n/a	n/a
	LSZ52A	Nylon	19 [0.75]	6,35 [0.25]	Back
	LSZ52B	Steel	19 [0.75]	6,35 [0.25]	Back
	LSZ52C	Nylon	19 [0.75]	6,35 [0.25]	Front
	LSZ52D	Steel	19 [0.75]	6,35 [0.25]	Front
	LSZ52L	Ball bearing	19 [0.75]	6,35 [0.25]	Front

	Catalog Listing	Material	Rod/Roller Dia. mm [in]	Rod/Roller Width mm [in]	Roller Mounting
	Fixed 38,1	mm [1.5 in]	radius		
	-	Rollerless	n/a	n/a	n/a
	LSZ55A	Nylon	19 [0.75]	6,35 [0.25]	Back
	LSZ55B	Steel	19 [0.75]	6,35 [0.25]	Back
	LSZ55C	Nylon	19 [0.75]	6,35 [0.25]	Front
	LSZ55D	Steel	19 [0.75]	6,35 [0.25]	Front
	Short fixe	d - 33 mm [1.	3 in] radius		
100	LSZ59A	Nylon	19 [0.75]	6,35 [0.25]	Front
	LSZ59B	Steel	19 [0.75]	6,35 [0.25]	Front
	LSZ59C	Nylon	19 [0.75]	6,35 [0.25]	Back
9	LSZ59D	Steel	19 [0.75]	6,35 [0.25]	Back
	38,1 mm [	1.5 in] radius	one-way rol	ler lever	
	LSZ60A	Nylon	19 [0.75]	6,35 [0.25]	Front
	LSZ60B	Steel	19 [0.75]	6,35 [0.25]	Front

#### **ADDITIONAL MATERIALS**

- Product installation instructions
- Product range guide
- Product nomenclature tree
- Product application-specific information
  - Limit and enclosed switches application information
  - Limit and enclosed switches operating characteristics
  - Limit and enclosed switches reference standards
  - Limit and enclosed switches typical applications
  - Product flyer: CE Family Miniature Limit Switches

#### For more information

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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.

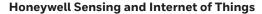
## Warranty/Remedy

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 defec-

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