

### MICRO SWITCH Cable-Pull Safety Switches



### **DESCRIPTION**

MICRO SWITCH CPS Series
Cable-Pull Safety Switches provide
a readily accessible emergency stop
signal, a cost-effective means compared
to using multiple emergency stop
push-buttons. The CPS Series Cable
Pull Safety Switch's internal mechanism
latches on both slackened cable (push)
and pulled cable.

The 1CPS is intended for use in applications where the cable span is 76 m [250 ft] or shorter. It is an economical solution for shorter runs or zone protection typical to automated systems. The 2CPS Series is intended for use in very long cable runs of 152 m [500 ft] or shorter, such as long conveyor lines found in warehouses.

A line in the midpoint of the cable tension window indicates proper cable tension, providing easy set-up. The direct opening switch contacts are held closed when the actuating cable is under proper tension and the reset knob is set to the RUN position. When the actuating cable is pulled, slackened, or broken, a cam positively opens the NC (Normally Closed) switch contacts. The snap-action operation causes the switch contacts to change state and mechanically latch almost simultaneously when the cable is pulled, slackened, or broken. The NC switch contacts remain open until the CPS is reset by properly tensioning the cable and manually rotating the reset knob.

The optional "Easy Start" threaded bushing enables quick alignment of the mounting nut to minimize any cross threading. The panel stand-off with O-ring feature available on some listings eliminates the need for behind-the-panel hardware, provides a uniform panel height and a panel-to-cover seal.

### **FEATURES**

- Direct opening action of NC (Normally Closed) contacts
- 2CPS: 2NO/2NC, 1NO/3NC, or 4NC contact configurations
- 1CPS: 1NO/1NC, 2NO/2NC, 1NO/3NC, or 4NC contact configurations
- Typical cable span of 76 m [250 ft] in an environment with a temperature change of ±17°C [±30°F]. Longer spans are possible depending upon temperature change and installation
- Choice of three actuator configurations (2CPS)
- Removable contact block version available (2CPS)
- J-hook turnbuckle included (2CPS)
- E-stop option (1CPS)
- Low profile reset and new indicator options (2CPS)
- Large wiring cavity with straight-through wiring
- Models avaliable without broken cable, slack-cable detection
- 24 Vdc or 120 Vac bright, multi-cluster high-intensity LED status indicator light available on 2CPS. Single LED on 1CPS. Low profile LED (2CPS) and emergency stop button (1CPS) options also offered
- Gold-plated contacts are standard on 2CPS, available on 1CPS
- Electrostatic, epoxy-coated, die-cast zinc housing
- Optional hardware packets available

### **DIFFERENTIATION**

 Internal mechanism latches on both slackened cable (push) and pulled cable

### **VALUE TO CUSTOMERS**

- Cost-effective means of providing an emergency stop signal compared to multiple emergency stop push buttons
- Capability enhances productivity by minimizing nuisance stops due to variations in temperature, stretch of cable over time, or other application variables
- Direct opening of normally closed contacts when cable is actuated

### **APPLICATIONS**

- Long conveyor systems found in warehouses and distribution centers
- Conveyor systems with a high amount of vibration
- Conveyor systems that experience wide temperature swings
- Long conveyor systems where easy-through wiring, or highly visible trip status, is required
- Perimeter guarding in hose-down conditions
- Packaging equipment
- Assembly lines

#### **PORTFOLIO**



The MICRO SWITCH CPS series is the largest switch in Honeywell's MICRO SWITCH line of safety switches. To view

the entire product portfolio, click here.

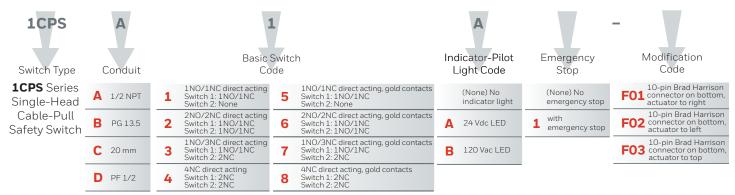


Parameter
Cable-pull safety switches
1NO/1NC direct acting 2NO/2NC direct acting 1NO/3NC direct acting 4NC direct acting
IP67, NEMA 1, 4, 12, 13
Silver, gold plated over silver
1/2 NPT, PG 13.5, 20 mm, PF 1/2; Brad Harrison 10-pin conductor
1CPS & 2CPS: 25 lb*
1CPS & 2CPS: 40 lb*
-40°C to 80°C [-40°F to 176°F]
1CPS: -40°C to 85°C [-40°F to 185°F]
1 million operations
10 A
2500 V
300 V
1 mA to 50 mA, 60 Vdc max./125 Vdc max.
3
1000 A
Class J fuse (10 A/600 V)
15 g per IEC 68-2-27
10 Hz to 500 Hz, 5 g per IEC 68-2-6
UL, CSA, CE, UKCA, SIL
<ul> <li>UL Listed per File E37138 against UL508</li> <li>CSA Certified per File 57323 against CSA C22.2 No. 14</li> <li>CE, UKCA mark: The CPS complies with Low Voltage Directive 2014/30/EU; Machinery Directive 2006/42/EC only as the directives relate to the components being used in a safety function; EN 60947-1; EN 60947-5-1; EN 60947-5-5</li> <li>SIL: MCTF (Mechanical Life): &gt;1,000,000 cycles with single-sided confidence limit of 100 %. MCTF (Electrical Life): &gt;25,000 cycles with single-sided confidence limit of 87.5 %. Highest SIL Capability: SIL3 (HFT:1), IEC 61508-2: 2010. Proof Test Interval: 1 Year</li> </ul>

 $<sup>\</sup>ensuremath{^\star}$  Incline measures and not typical for manual trip

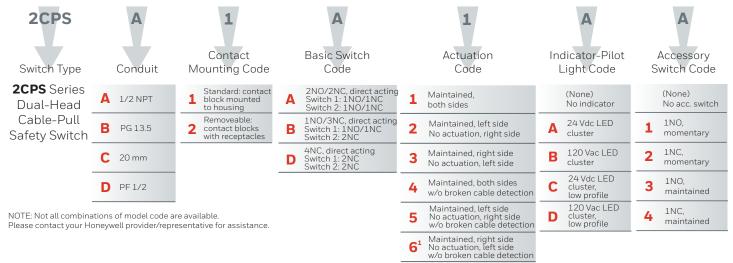
TABLE 2. ELECTRICAL RATINGS						
ac		dc				
A300 Ue	AC15 le	Q300 Ue	DC13 le			
Volts	Amps	Volts	Amps			
_	_	24	2.8			
120	6	125	0.55			
240	3	250	0.27			
Ith = 10 A						

Figure 1. 1CPS Product Nomenclature and Order Guide



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

Figure 2. 2CPS Product Nomenclature and Order Guide



<sup>&</sup>lt;sup>1</sup> Not valid on 4NC switches

### **TEMPERATURE-SPAN DISTANCE APPLICATION INFORMATION**

Cable-pull switches featuring broken cable detection require pre-tensioning in order to enable the RUN condition.

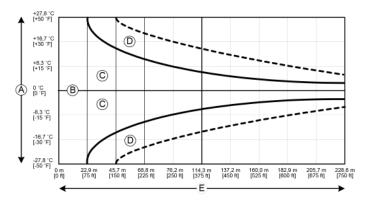
The relative expansion or contraction of the steel actuating cable when the ambient temperature increases or decreases must be taken into account when pre-tensioning a cable pull switch.

The change in cable length with change in temperature can cause significant nuisance shut downs on longer runs.

Install the system when the temperature is at the mid point of the extremes. If a warehouse has a low temperature of 15.6°C [60°F] and a high of 32.2°C [90°F], set up the system at the midpoint 23.9°C [75°F].

Use an endspring or another CPS at the opposite end of the cable span to double the temperature tolerance and to meet the requirements of EN 418.

Figure 3. Total Temperature Variation vs. Cable Span **Distance** 

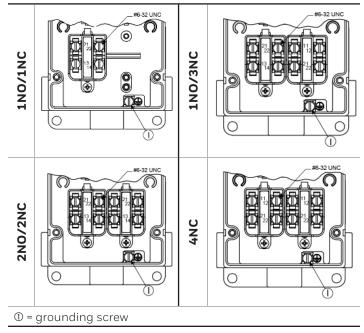


- A = Total temperature variation
- B = Setup point Ideally at middle of temperature extremes
- C = Cable Pull Switch usable temperature span without endspring or second CPS
- D = Cable Pull Switch usable temperature span with endspring or second CPS
- E = Cable span distance

**Table 3. Circuitry Charts** 

Circuitry	Chart
1NO/1NC	21 0 22 13 14
2NO/2NC	21 22 22 13 14 13 14
1NO/3NC	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$
4NC	$ \bigoplus_{21} \frac{11}{22} \bigoplus_{21} \frac{11}{22} $

Table 4. 1CPS Contact Blocks



**Table 5. 2CPS Contact Blocks** 

Contact Block M	ounted to Housing	Removable Contact Blocks with Heavy-Duty Wiring Receptacles			
	A = grounding screw				
2NO/2NC	M3	2NO/2NC	#6-32 UNC		
1NO/3NC	13 14 21 22 21 22 4 21 22 21 22 4 21 22 21 22 21 22 21 22 21 22 21 22 21 22 21 22 21 22 21 22 21 22 21 22 21 22 21 22 21 22 21 22 21 2	1NO/3NC	13 14 21 22 11 22		
4NC	11 12 1 12 1 12 1 12 1 22 1 1				

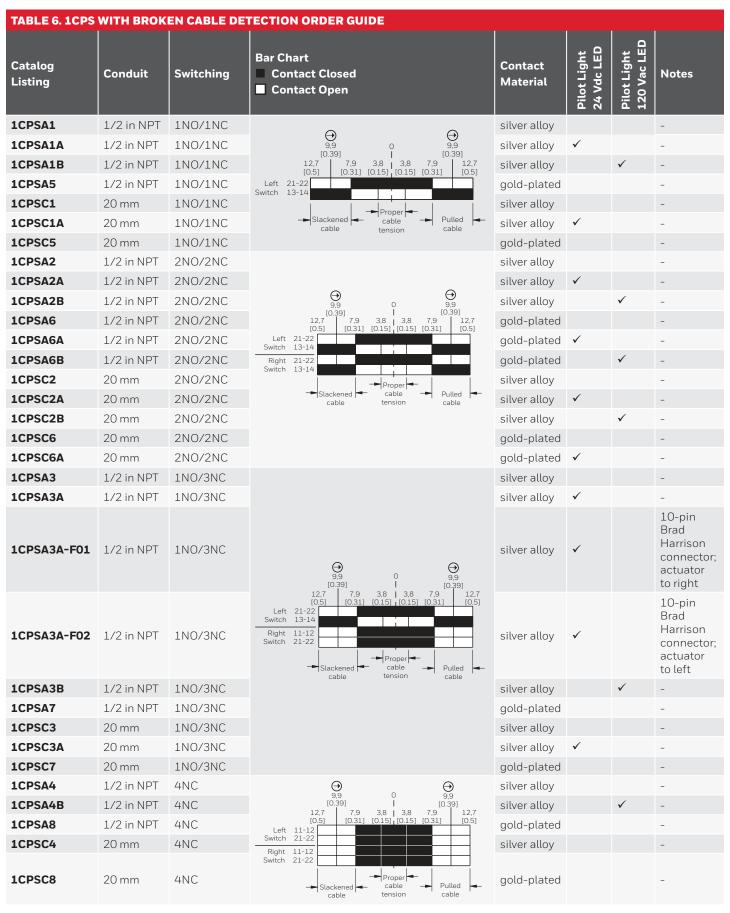


TABLE TABLE 7. 1CPS WITHOUT BROKEN CABLE DETECTION ORDER GUIDE							
Catalog Listing	Conduit	Switching	Bar Chart  ■ Contact Closed ■ Contact Open	Contact Material	Pilot Light 24 Vdc LED	Pilot Light 120 Vac LED	Notes
1CPSA1-N	1/2 in NPT	1NO/1NC	9,9 [0.39]	silver alloy			-
1CPSA1A-N	1/2 in NPT	1NO/1NC	7,9 12,7 0 [0.31] [0.5] Left 21-22 Switch 13-14	silver alloy	✓		-
1CPSA1B-N	1/2 in NPT	1NO/1NC	Pulled cable	silver alloy		✓	-
1CPSA2-N	1/2 in NPT	2NO/2NC	9,9 [0,39] 7,9 0 [0,31] [0,5] Left 21-22	silver alloy			-
1CPSA2B-N	1/2 in NPT	2NO/2NC	Switch 13-14  Right 21-22 Switch 13-14  Pulled cable	silver alloy		✓	-
1CPSA4B-N	1/2 in NPT	4NC	9,9 (0,39) 7,9 (0,31) (0,5) Switch 21-22 Right 11-12 Switch 21-22	silver alloy		<b>√</b>	-

6. 2CPS WITH	BROKEN CABLE DET	ECTION AND SILVER ALL	DY CONTACTS ORDER GUIDE					
alog ing	Conduit	Switching	Bar Chart  ☐ Contact Closed ☐ Contact Open	Standard Contact Block	Removeable Contact Block	Actuation	Pilot Light LED	Notes
PSA1A1	1/2 in NPT	2NO/2NC		✓		Both		-
PSA1A1A	1/2 in NPT	2NO/2NC		✓		Both	24 Vdc	-
PSA1A1A-FW	1/2 in NPT	2NO/2NC		✓		Both	24 Vdc	10-pin Brad Harrison connecto actuator to right
PSA1A1B	1/2 in NPT	2NO/2NC		✓		Both	120 Vdc	-
PSA1A2	1/2 in NPT	2NO/2NC		✓		Left only		-
CPSA1A2A	1/2 in NPT	2NO/2NC		✓		Left only	24 Vdc	-
CPSA1A2A-FW	1/2 in NPT	2NO/2NC		✓		Left only	24 Vdc	10-pin Brad Harrison connecto actuator to right
CPSA1A2B	1/2 in NPT	2NO/2NC		✓		Left only	120 Vdc	-
PSA1A3	1/2 in NPT	2NO/2NC		✓		Right only		-
PSA1A3A	1/2 in NPT	2NO/2NC	9,9 0 <u>0</u>	✓		Right only	24 Vdc	-
CPSA1A3A-FW	1/2 in NPT	2NO/2NC	[0.39]   [0.39] 12,7   7,9 3,8 3,8 7,9   12,7 [0.5]   [0.31]   [0.15]   [0.31]   [0.5]	✓		Right only	24 Vdc	10-pin Brad Harrison connecto actuator to right
CPSA1A3B	1/2 in NPT	2NO/2NC	Left 21-22 Switch 13-14	✓		Right only	120 Vdc	-
PSA2A1	1/2 in NPT	2NO/2NC	Right 21-22		✓	Both		-
PSA2A1A	1/2 in NPT	2NO/2NC	Switch 13-14		✓	Both	24 Vdc	-
PSA2A1B	1/2 in NPT	2NO/2NC	Proper		✓	Both	120 Vdc	-
PSA2A2	1/2 in NPT	2NO/2NC	Slackened cable Pulled		✓	Left only		-
PSA2A2A	1/2 in NPT	2NO/2NC	cable tension cable		✓	Left only	24 Vdc	-
PSA2A2B	1/2 in NPT	2NO/2NC			✓	Left only	120 Vdc	-
PSA2A3	1/2 in NPT	2NO/2NC			✓	Right only		-
CPSA2A3A	1/2 in NPT	2NO/2NC			✓	Right only	24 Vdc	-
PSA2A3B	1/2 in NPT	2NO/2NC			✓	Right only	120 Vdc	-
CPSC1A1	20 mm	2NO/2NC		✓		Both		-
PSC1A1A	20 mm	2NO/2NC		✓		Both	24 Vdc	-
PSC1A2	20 mm	2NO/2NC		✓		Left only		-
PSC1A2A	20 mm	2NO/2NC		✓		Left only	24 Vdc	-
PSC1A3	20 mm	2NO/2NC		✓		Right only		-
PSC1A3A	20 mm	2NO/2NC		✓		Right only	24 Vdc	-
PSC2A1A	20 mm	2NO/2NC			✓	Both	24 Vdc	-

### **MICRO SWITCH CABLE-PULL SAFETY SWITCHES**

### **CPS SERIES**

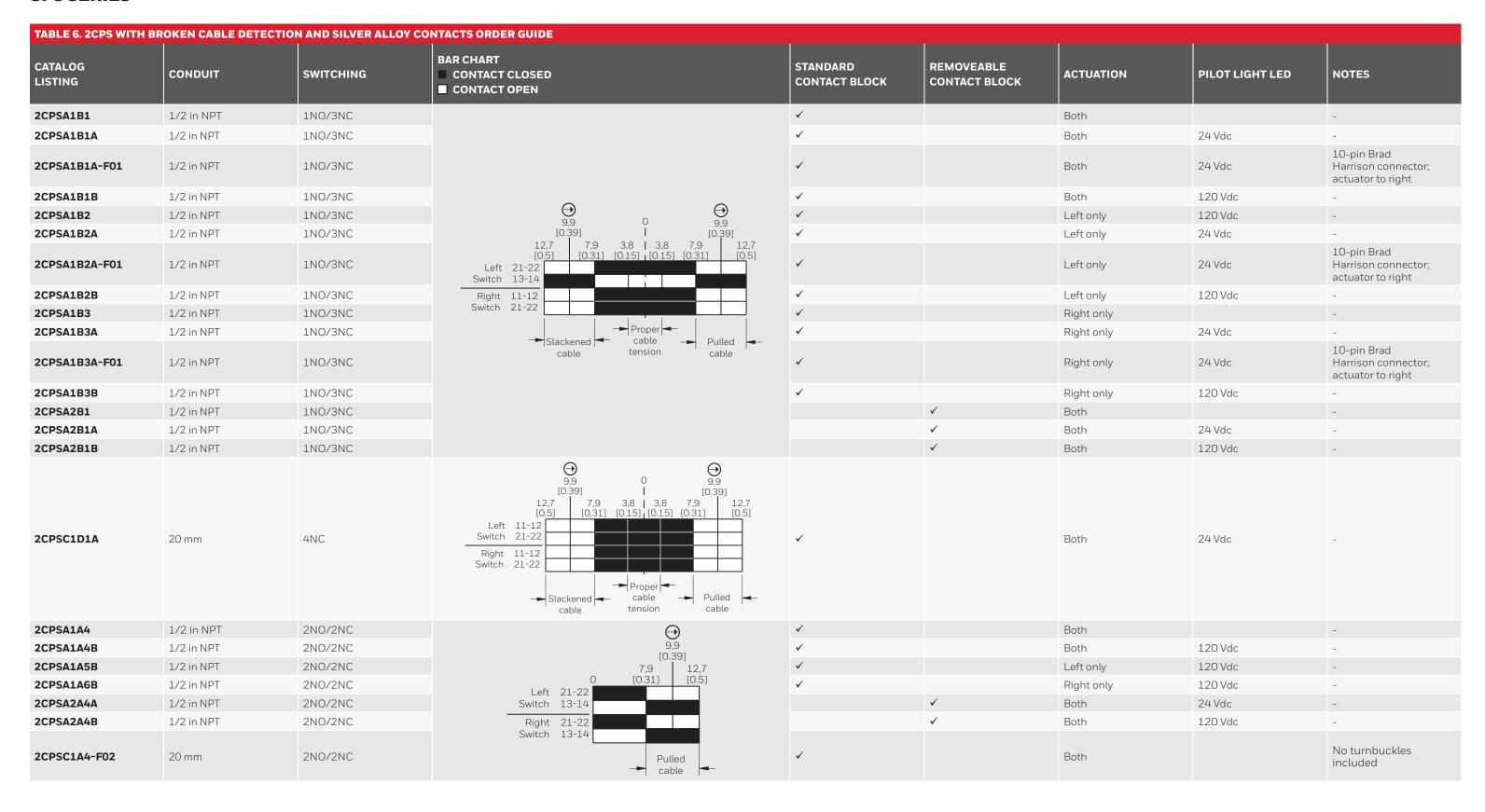


Figure 4. 1CPS Dimensional Drawing

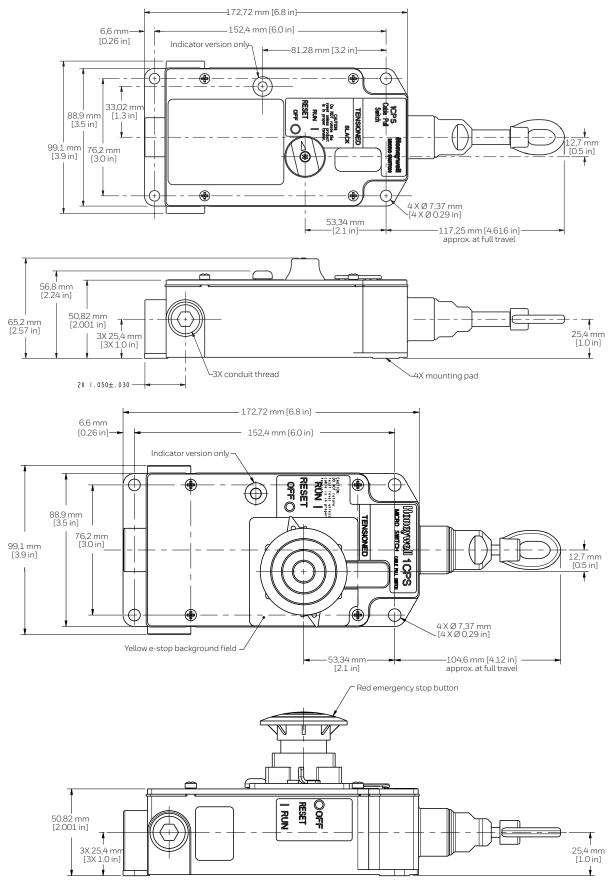


Figure 5. 2CPS Dimensional Drawing

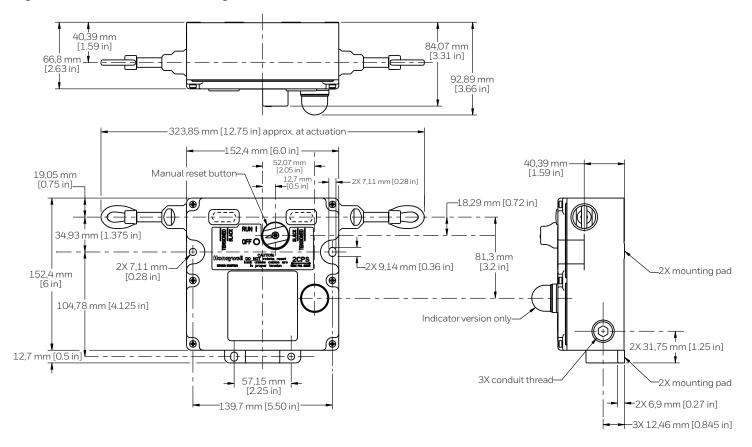
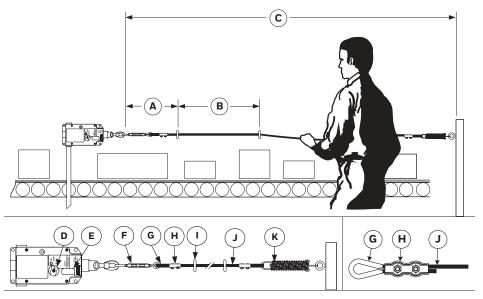


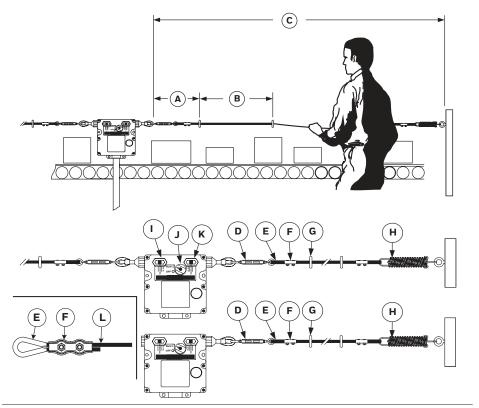
Figure 6. 1CPS Application Information



- 0,46 m [18 in] maximum
- 2,4 m [8 ft] maximum В
- 76 m [250 ft] maximum
- Reset knob
- Tension indicator line is in center of indicator window - cable is properly tensioned
- J-hook turnbuckle
- G Thimble

- Cable clamp
- Cable support (eyebolt) 1
- Cable
- Endspring

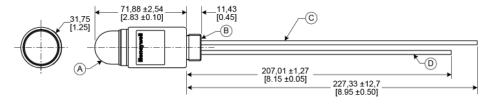
**Figure 7. 2CPS Application Information** 



- 0,46 m [18 in] maximum
- 2,4 m [8 ft] maximum
- 76 m [250 ft] maximum J-hook turnbuckle
- Thimble
- Cable clamp
- G Cable support (eyebolt)
- Endspring
- Tension indicator line is in center of indicator window - left cable is properly tensioned
- Reset knob
- Endspring
- Cable

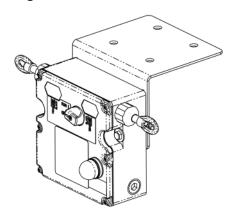
TABLE 10. ACCESSORIES/HARDWARE PACKETS					
Characteristic	Parameter				
CLSZC1	Cable - 7,6 m [25 ft] length				
CLSZC2	Cable - 15,2 m [50 ft] length				
CLSZC3	Cable - 30,5 m [100 ft] length				
CLSZC4	Cable - 45,7 m [150 ft] length				
CLSZC5	Cable - 61 m [200 ft] length				
CLSZC7	Cable - 76,2 m [250 ft] length				
CLSZTC	<ul><li>(2) Thimbles</li><li>(2) Low-profile duplex cable clamps</li></ul>				
CLSZ1S	(1) Draw-bar endspring				
CPSZ1E	M6 x 1 x 60 mm eyebolt				
CPSZ1S	(1) Draw-bar endspring				
CPSZK1	<ul> <li>(1) J-hook turnbuckle with lock nuts</li> <li>(2) Thimbles</li> <li>(2) Low-profile duplex cable clamps</li> <li>(16) Sets of cable supports [(16) 1/4-20 eye bolts, (32) 1/4-20 nuts, (32) flat washers,</li> <li>(16) lock washers]</li> </ul>				
CPSZK2	European hardware packet (1) J-hook turnbuckle with lock nuts (2) Thimbles (2) Stainless steel cable clamps (16) Sets of cable supports [(16) 1/4-20 eye bolts, (32) 1/4-20 nuts, (32) flat washers, (16) lock washers]				
CPSZTB	J-hook turnbuckle with lock nuts (included with 2CPS)				
CPSLED24	Multi-cluster LED accessory - 24 Vdc (conduit mount)				
CPSLED120	Multi-cluster LED accessory - 120 Vac (conduit mount)				
CPS-BRACKET	Mounting bracket (to be used with 1CPS or 2CPS)				

Figure 8. CPSLED Dimensional Drawing



- Multi-LED red pilot light Α
- 1/2-14 NPSM Thread В
- С 18 AWG red PVC insulation
- 18 AWG black PVC insulation D

Figure 9. CPS-Bracket



#### ADDITIONAL INFORMATION

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

- · Product line guide
- Product part listing/nomenclature tree
- · Product range guide
- · CPS troubleshooting guide
- Electromechanical safety switch product selection guide
- Application note: MICRO SWITCH switches in conveyor applications

#### 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**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.

### FOR MORE INFORMATION

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