

# CPS Series

## Cable Pull Safety Switch



### FEATURES

- Direct opening action  $\rightarrow$  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  $\pm 17^\circ\text{C}$  ( $\pm 30^\circ\text{F}$ ). Longer spans are possible depending upon temperature change and installation (ref. note on page 6 for more details or Application note - Effect of Temperature on Cable Pull Switch Operation)
- Choice of three actuator configurations (2CPS)
- Removable contact block version available (2CPS)
- Large wiring cavity with straight-through wiring
- 24 Vdc or 120 Vac bright, multicluster LED status indicator light available on 2CPS. Single high intensity LED on 1CPS
- Gold-plated contacts are standard on 2CPS, available on 1CPS
- Die-cast zinc housing
- Optional hardware packs available

### TYPICAL APPLICATIONS

- Long conveyor systems found in warehouses and distribution centers
- Conveyor systems having 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
- Hose down conditions
- Packaging equipment
- Assembly lines



CPS Series Cable Pull Safety Switches provide a readily accessible emergency stop signal. This is a cost-effective means compared to using multiple emergency stop push-buttons. (Cable Pull Safety Switches are not, however, to be used as a means of personnel safeguarding. They may be used to prevent further injury or damage to equipment when used for emergency stop signaling.)

The CPS Series Cable Pull Safety switch is designed to provide emergency stop protection for exposed conveyor and assembly lines. The internal mechanism latches on both slackened cable (push) and pulled cable. This capability also enhances productivity by eliminating nuisance stops due to variations in temperature, stretch of cable over time, and other application variables.

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 RUN. When the actuating cable is pulled, slackened or broken, a cam positively opens the NC (Normally Closed) switch contacts. The snap action, trip 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.

When the direct opening switch contacts open, the auxiliary contacts also actuate (open contacts close and closed contacts open). The auxiliary contacts are electrically isolated from the direct opening switch contacts. These NO (Normally Open) contacts may be used for monitoring or signaling.

The CPS complies with: Low Voltage Directive 73/23/EEC, as amended by directive 93/68/EEC; Machinery Directive 98/37/EEC only as the directives relate to the components being used in a safety function; IEC/EN 60947-1; IEC/EN 60947-5-1; IEC/EN 60947-5-5.

### WARNING

#### MISUSE OF DOCUMENTATION

- The information presented in this product sheet (or catalogue) is for reference only. DO NOT USE this document as system installation information.
- 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.

CPS

## 1CPS

### Cable Pull Safety Switch

#### Technical Data

**Mechanical life** 1 000 000 operations

**Degree of protection** IP 67  
NEMA 1, 4, 12, 13

**Temperature range** *Operating:*  
-25 °C to +80 °C /  
-13 °F to +176 °F  
without condensation

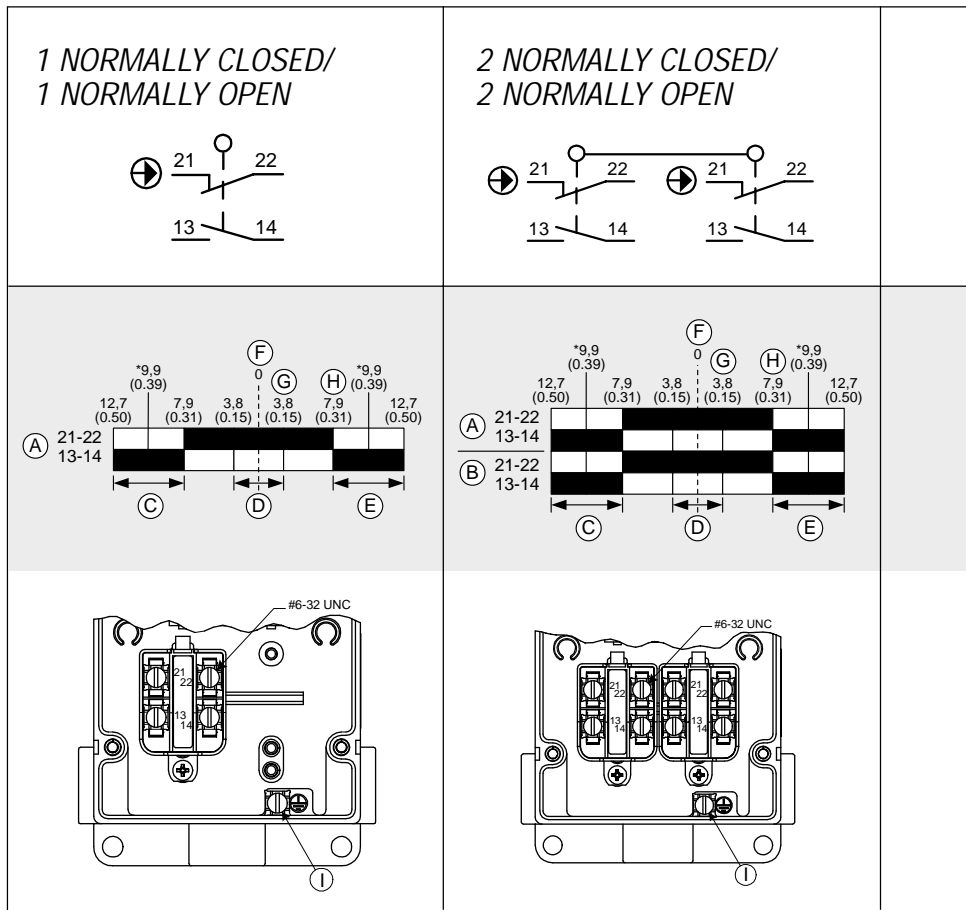
**Approvals** IEC/EN 60947-1  
IEC/EN 60947-5-1  
IEC/EN 60947-5-5  
AC15 A300  
DC13 Q300  
UL & CSA  
BG Applied for

**Vibration** 10 Hz - 500 Hz, 5 g

**Shock** 15 g

**Contact material** Silver standard  
Gold plated optional

**Included accessories** None



- A Left switch
- B Right switch
- C Slackened cable
- D Proper cable tension
- E Pulled cable
- F Cable tension = 111 N (25 lb)
- G Cable tension = 133 N (30 lb)
- H Cable tension = 178 N (40 lb)
- I Ground screw
- Contact closed
- Contact open

Conduit Thread

**A** = 1/2" NPT

**C** = 20 mm

Ordering:

**1CPS**

**X**

Example: 1CPSA1A

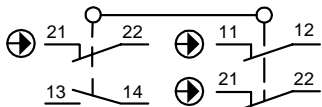
▲ Gold-plated contacts

**1**  
**5▲**

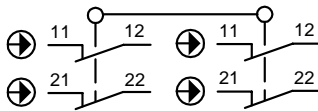
**2**  
**6▲**

**X**

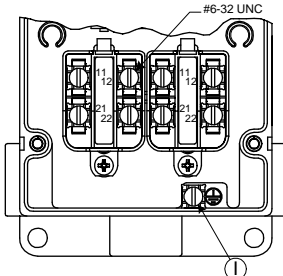
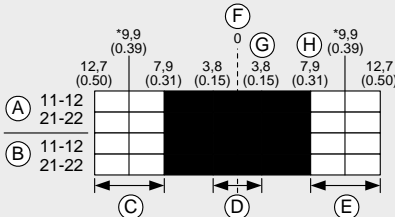
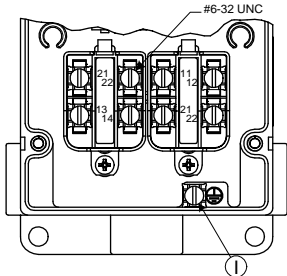
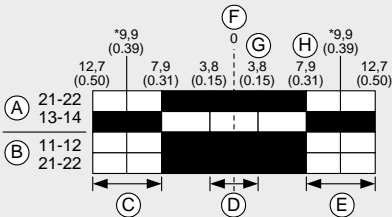
3 NORMALLY CLOSED/  
1 NORMALLY OPEN



4 NORMALLY CLOSED



Indicator-Pilot Light Code



A : 24 V LED

B : 120 V LED

A

B

CPS

3  
7<sup>▲</sup>

4  
8<sup>▲</sup>

X

## 2CPS

### Cable Pull Safety Switch

#### Technical Data

**Mechanical life** 1 000 000 operations

**Degree of protection** IP 67  
NEMA 1, 4, 12, 13

**Temperature range** *Operating:*  
-40 °C to +80 °C /  
-40 °F to +176 °F  
without condensation

**Approvals** IEC/EN 60947-1  
IEC/EN 60947-5-1  
IEC/EN 60947-5-5  
AC15 A300  
DC13 Q300  
UL & CSA  
BG

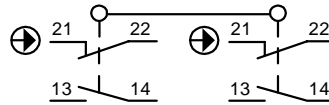
**Vibration** 10 Hz - 500 Hz, 5 g

**Shock** 15 g

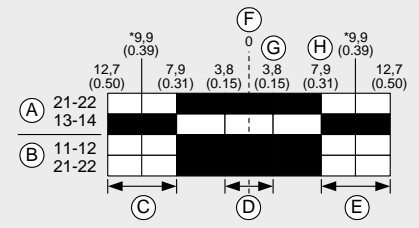
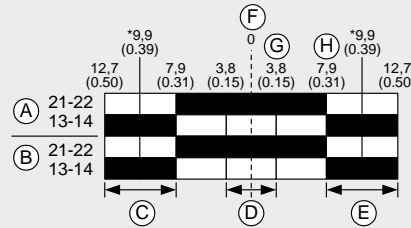
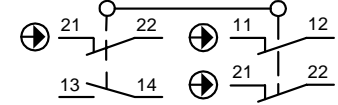
**Contact material** Gold plate  
over silver

**Included accessories** Turnbuckle(s)

2 NORMALLY CLOSED/  
2 NORMALLY OPEN



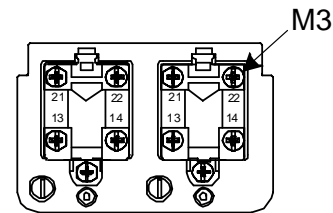
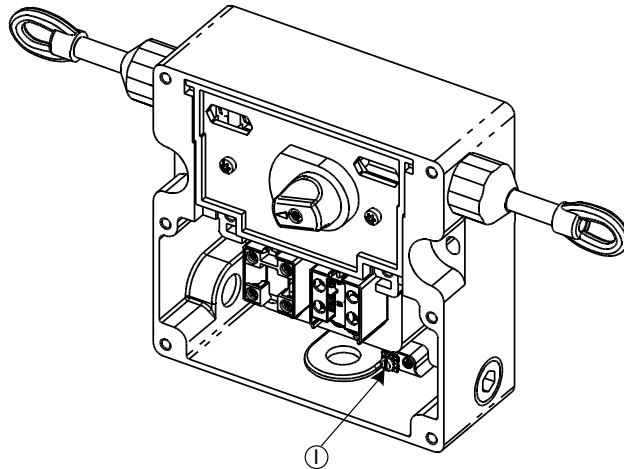
3 NORMALLY CLOSED/  
1 NORMALLY OPEN



- A Left switch
  - B Right switch
  - C Slackened cable
  - D Proper cable tension
  - E Pulled cable
  - F Cable tension = 111 N (25 lb)
  - G Cable tension = 133 N (30 lb)
  - H Cable tension = 178 N (40 lb)
  - I Ground screw
- Contact closed  
 Contact open

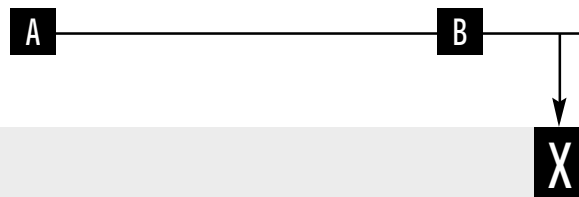
CPS

#### Contact blocks mounted to housing



**Conduit Thread**  
 1/2" NPT = **A**  
 20 mm = **C**

**Contact block mounting**  
**1** = to housing  
**2** = removable with heavy duty terminals



Ordering:

**2CPS**

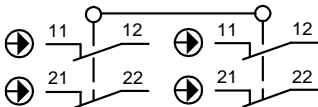
**X**

**X**

**X**

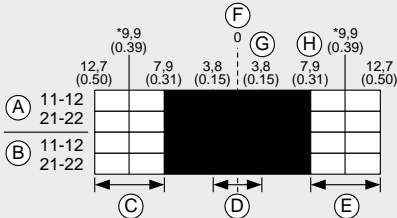
Example: 2CPSA1A2B

4 *NORMALLY CLOSED*



**Actuation Code**

**Indicator Light Code**



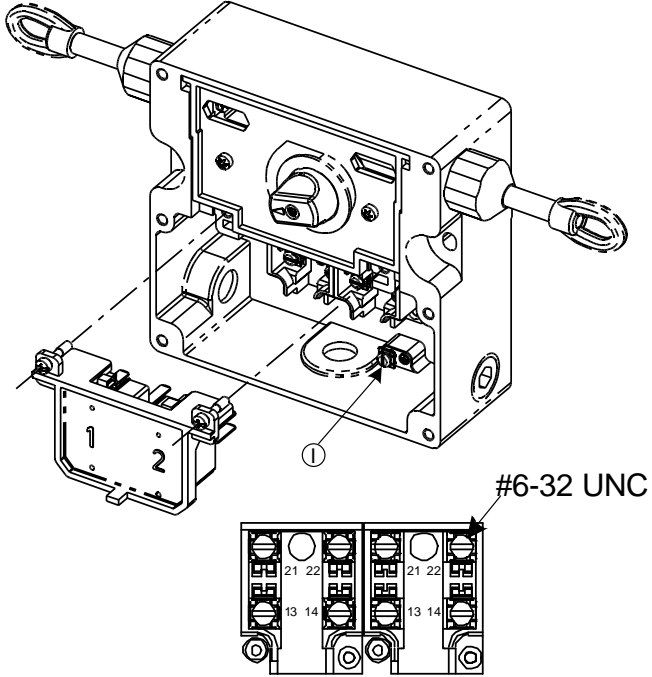
- 1: Maintained both sides
- 2: Maintained left side, no actuation right side
- 3: Maintained right side, no actuation left side

**1**  
**2**  
**3**

- No letter: no indicator provided
- A: 24 Vdc red multi-cluster LED
- B: 120 Vac red multi-cluster LED

**A**  
**B**

**Removable contact blocks with heavy duty wiring receptacles**



**D**

**X**

**X**

**CPS**

# Temperature-Span Distance Application Information

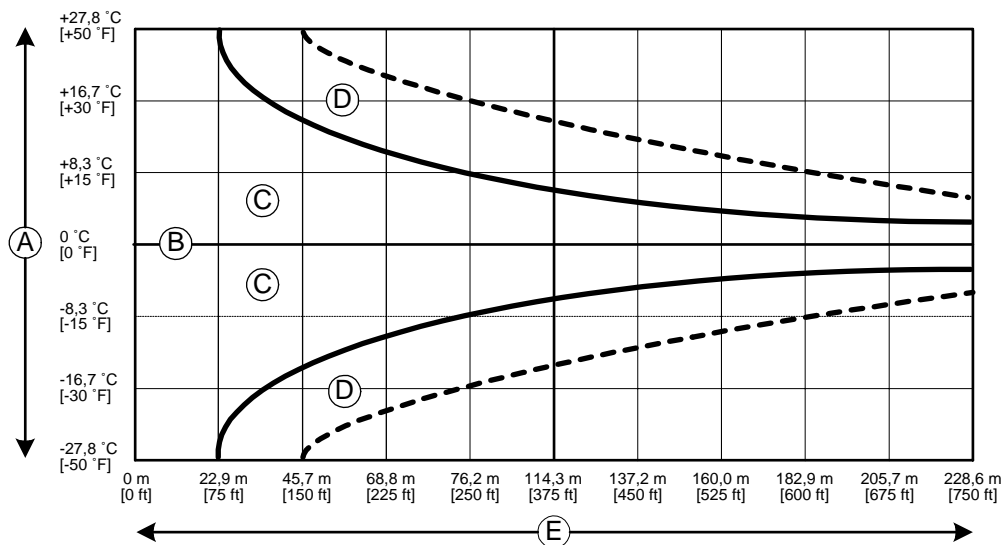
Cable Pull Switches featuring broken cable detection require pre-tensioning in order to enable the RUN condition.

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.

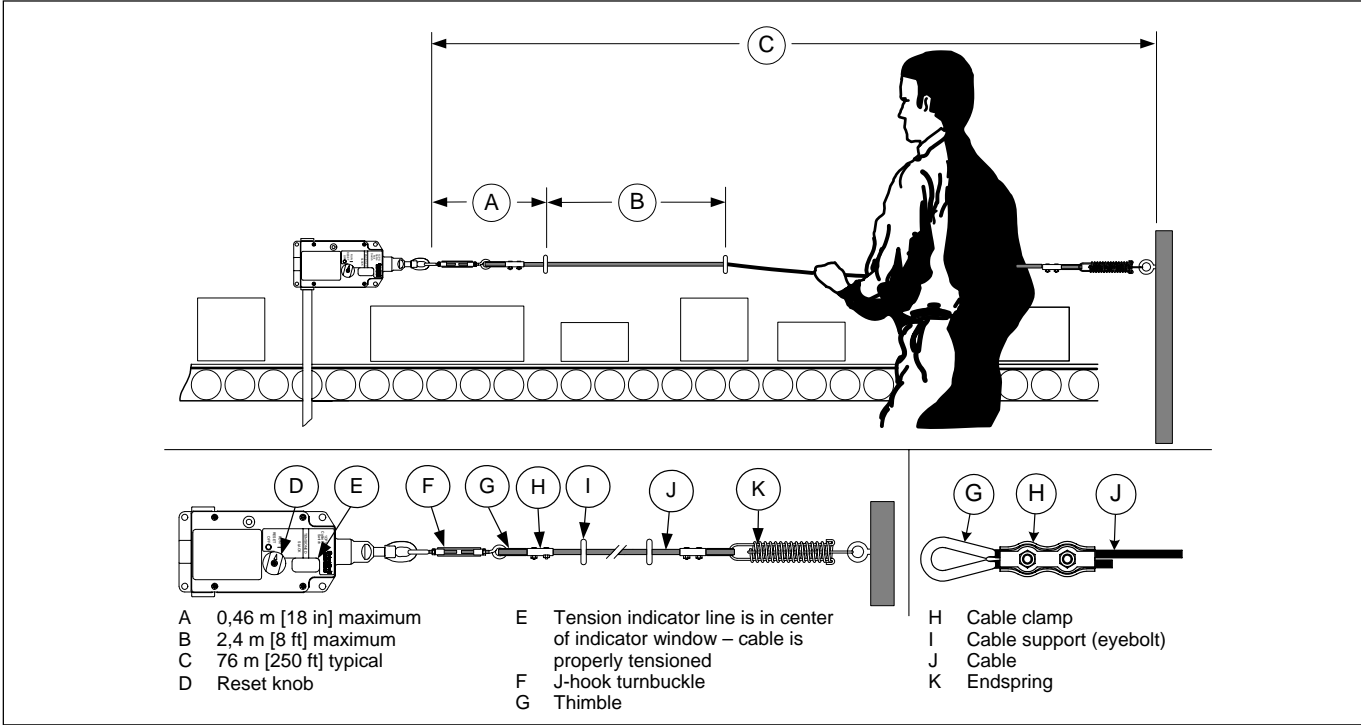


- A = Total temperature variation
- B = Setup point - Ideally at middle of temperature extremes
- C = Cable Pull Switch usable temperature span without endspring or second CPS
- D = Cable Pull Switch usable temperature span with endspring or second CPS
- E = Cable span distance

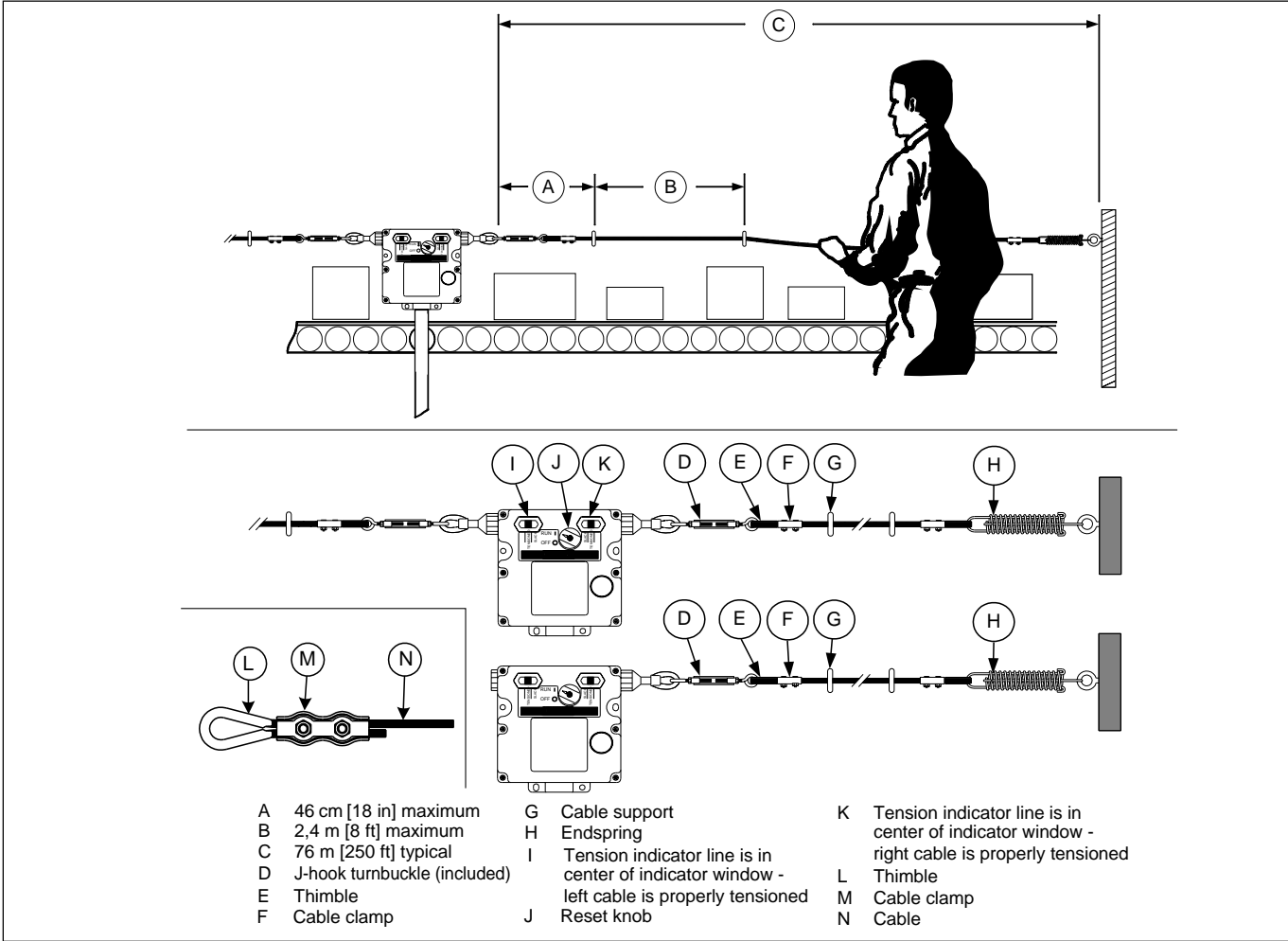
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# Application information

1CPS



2CPS



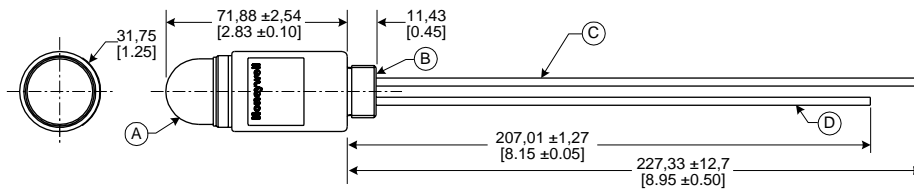
CPS

## Hardware packets (available separately)

Listing	Accessory
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	(2) Thimbles (2) Low-profile Duplex Cable Clamps
CPSZ1S	(1) Draw-bar Endspring
CPSZK1	(1) J-hook Turnbuckle with Lock Nuts (2) Thimbles (2) Low-profile Duplex Cable Clamps (16) Sets of Cable Supports ((16) 1/4-20 Eye Bolts, (32) 1/4-20 Nuts, (32) Flat Washers, (16) Lock Washers)
CPSLED24	Multicluster LED Accessory - 24 Vdc (conduit mount)
CPSLED120	Multicluster LED Accessory - 120 Vdc (conduit mount)
CPS-BRACKET	Mounting bracket (to be used with 1CPS or 2CPS)
CPSZTB	J-hook turnbuckle with lock nuts (included with 2CPS)

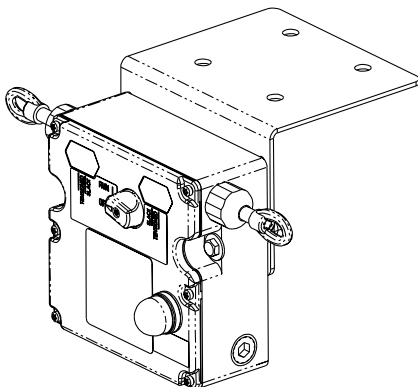
CPS

### CPSLED



- A Multi-LED red pilot light
- B 1/2-14 NPOm Thread
- C 18 AWG red PVC insulation
- D 18 AWG black PVC insulation

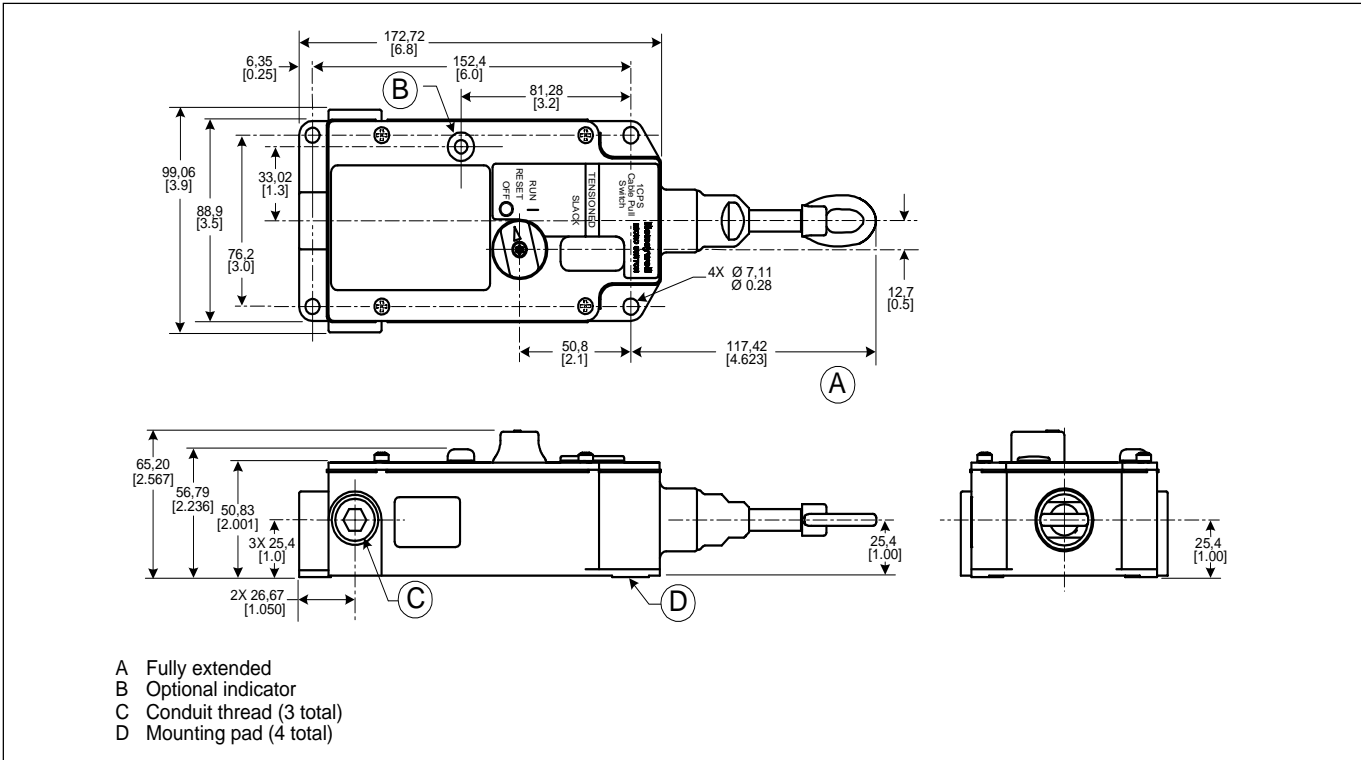
### CPS-BRACKET



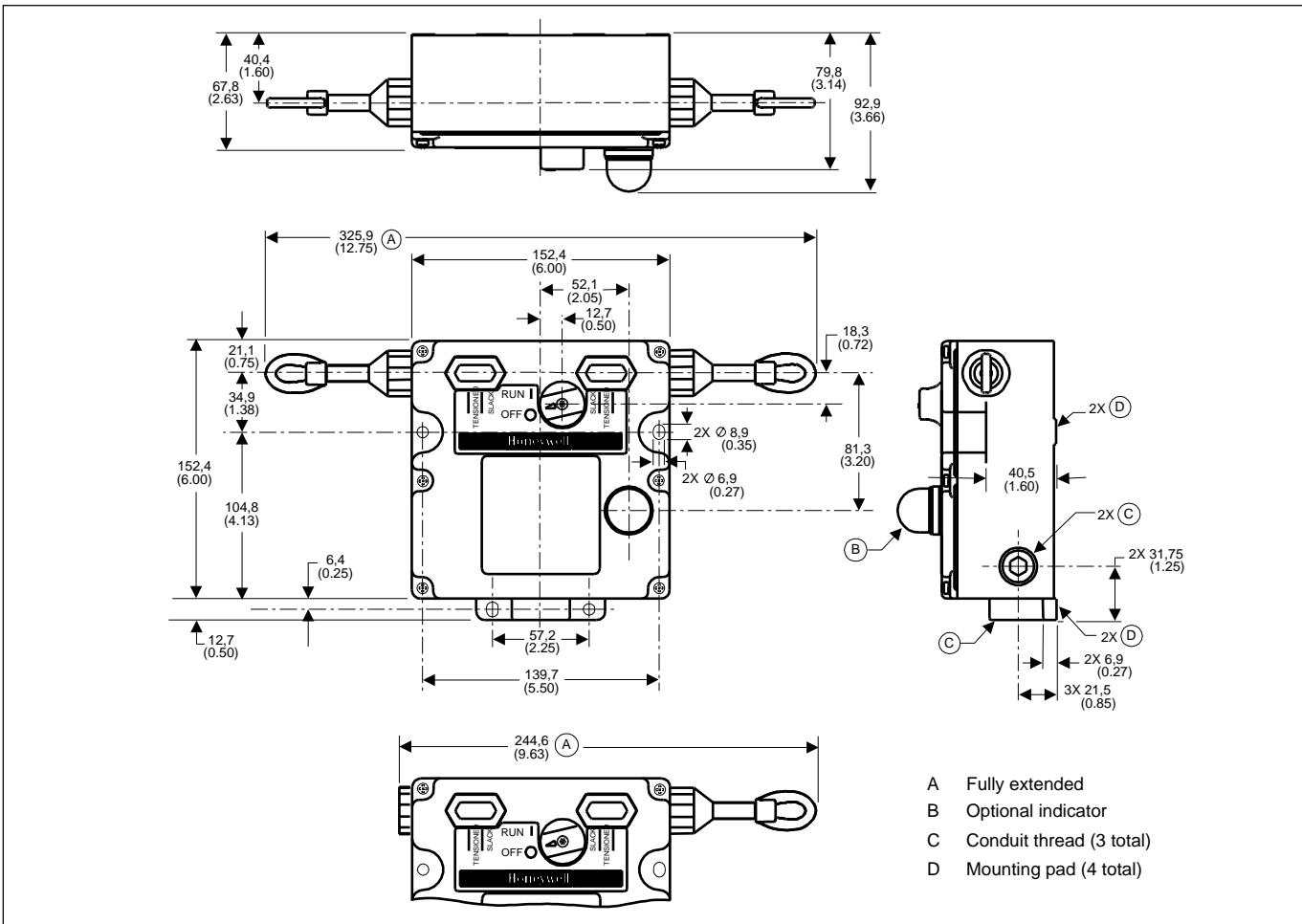


# Mounting dimensions (mm/in)

## 1CPS



## 2CPS



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E-mail: [info.sc@honeywell.com](mailto:info.sc@honeywell.com)

### ASIA PACIFIC

#### Control Products Asia Pacific Headquarters

Phone: +(65) 6355-2828  
FAX: +(65) 6445-3033

#### Australia

Honeywell Limited  
Phone: +(61) 2-9370-4500  
FAX: +(61) 2-9370-4525  
Toll Free 1300-36-39-36  
Toll Free Fax 1300-36-04-70

#### China - PRC - Beijing

Honeywell (Tianjin) Ltd.  
Phone: +(86-10) 8458-3280  
FAX: +(86-10) 8458-3102

#### China - PRC - Shanghai

Honeywell China Inc.  
Phone: +(86-21) 6237-0237  
FAX: +(86-21) 6237-1237

#### China - Hong Kong SAR

Honeywell Ltd.  
Phone: +(852) 2953-6412  
FAX: +(852) 2953-6767

### India

Tata Honeywell Ltd  
Phone: +(91) 20 687 0445/  
0446  
FAX: +(91) 20 681 2243/  
687 5992

### Indonesia

Honeywell Indonesia Pte Ltd  
Phone: +(62-21) 535-8833  
FAX: +(62-21) 5367 1008

### Japan

Honeywell Inc  
Phone: +(81) 3 5440 1425  
FAX: +(81) 3 5440 1368

### South Korea

Honeywell Korea Co. Ltd  
Phone: +(822) 799-6167  
FAX: +(822) 792-9013

### Malaysia

Honeywell Engineering Sdn Bhd  
Phone: +(60-3) 7958-4988  
FAX: +(60-3) 7958-8922

### New Zealand

Honeywell Limited  
Phone: +(64-9) 623-5050  
FAX: +(64-9) 623-5060  
Toll Free (0800) 202-088

### Philippines

Honeywell Systems (Philippines) Inc.  
Phone: +(63-2) 636-1661/1662  
FAX: +(63-2) 638-4013

### Singapore

Honeywell South East Asia  
Phone: +(65) 6355-2828  
FAX: +(65) 6445-3033

### Taiwan R.O.C.

Honeywell Taiwan Ltd.  
Phone: +(886-2) 2245-1000  
FAX: +(886-2) 2245 3242

### Thailand

Honeywell Systems Ltd.  
Phone: +(662) 693 3099  
FAX: +(662) 693 3085

### NORTH AMERICA

#### Canada

Honeywell LTD  
Phone: 1-800-737-3360  
FAX: 1-800-565-4130

#### USA

Control Products,  
International Headquarters  
Phone: 1-800-537-6945  
1-815-235-6847  
FAX: 1-815-235-6545  
E-mail: [info.sc@honeywell.com](mailto:info.sc@honeywell.com)

### EUROPE

#### Austria

Honeywell Austria GmbH  
Phone: +(43) 1 727 80 366/246  
FAX: +(43) 1 727 80 337

#### Belgium

Honeywell SA/NV  
Phone: +(32) 2 728 2522  
FAX: +(32) 2 728 2502

#### Bulgaria

Honeywell EOOD  
Phone: +(359) 2 79 40 27  
FAX: +(359) 2 79 40 90

### Czech Republic

Honeywell spol. s.r.o.  
Phone: +(420) 2 6112 3469/  
3424  
FAX: +(420) 2 6112 3461

### Denmark

Honeywell A/S  
Phone: +(45) 39 55 55 55  
FAX: +(45) 39 55 55 58

### Finland

Honeywell OY  
Phone: +(358) 9 3480101  
FAX: +(358) 9 34801375

### France

Honeywell SA  
Phone: +(33) 1 60 19 80 40  
FAX: +(33) 1 60 19 81 73

### Germany

Honeywell AG  
Phone: +(49) 69 8064 444  
FAX: +(49) 69 8064 442

### Hungary

Honeywell Kft.  
Phone: +(36 1) 451 4300  
FAX: +(36 1) 451 4343

### Italy

Honeywell S.p.A.  
Phone: +(39) 02 92146 450/  
456  
FAX: +(39) 02 92146 490

### The Netherlands

Honeywell B.V.  
Phone: +(31) 20 565 69 11  
FAX: +(31) 20 565 66 00

### Norway

Honeywell A/S  
Phone: +(47) 66 76 20 00  
FAX: +(47) 66 76 20 90

### Poland

Honeywell Sp. z o.o  
Phone: +(48) 22 606 0900  
FAX: +(48) 22 606 0901

### Portugal

Honeywell Portugal Lda  
Phone: +(351 21) 424 50 00  
FAX: +(351 21) 424 50 99

### Romania

Honeywell Bucharest  
Phone: +(40) 1 2110076  
FAX: +(40) 1 2103375

### Commonwealth of Independent States (CIS)

ZAO Honeywell  
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FAX: +(7 095) 796 98 93

### Slovak Republic

Honeywell s.r.o.  
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FAX: +(421 7) 58247 415

### South Africa (Republic of)

Honeywell Southern Africa  
Honeywell S.A. Pty. Ltd  
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FAX: +(27) 11 805 1504

### Spain

Honeywell S.A.  
Phone: +(34) 91 313 6100  
FAX: +(34) 91 313 6129

### Sweden

Honeywell AB  
Phone: +(46) 8 775 55 00  
FAX: +(46) 8 775 56 00

### Switzerland

Honeywell AG  
Phone: +(41) 1 855 24 40  
FAX: +(41) 1 855 24 45

### Turkey

Honeywell Turkey A.S.  
Phone: +(90) 216 575 6620  
FAX: +(90) 216 575 6637

### United Kingdom

Honeywell Control Systems Ltd  
Phone: +(44) 1698 481 481  
FAX: +(44) 1698 481 276

### Mediterranean & African Distributors

Honeywell SpA  
Phone: +(39) 2 921 46 232  
FAX: +(39) 2 921 46 233

### Middle East Headquarters

Honeywell Middle East Ltd.  
Phone: +(9712) 443 2119  
FAX: +(9712) 443 2536

### LATIN AMERICA

#### Argentina

Honeywell S.A.I.C.  
Phone: +(54-11) 4383-3637  
FAX: +(54-11) 4325-6470

#### Brazil

Honeywell do Brasil & Cia  
Phone: +(55-11) 7266 1900  
FAX: +(55-11) 7266 1905

#### Chile

Honeywell Chile, S.A.  
Phone: +(56-2) 233-0688  
FAX: +(56-2) 231-6679

#### Columbia

Honeywell Columbia, S.A.  
Phone: +(57-1) 623-3239/3051  
FAX: +(57-1) 623-3395

#### Ecuador

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#### Mexico

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Phone: +(52) 55 5259-1966  
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#### Peru

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FAX: +(511) 348-3552

#### Puerto Rico

Honeywell Inc.  
Phone: +(809) 792-7075  
FAX: +(809) 792-0053

#### Trinidad

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Phone: +(868) 624-3964  
FAX: +(868) 624-3969

#### Venezuela

Honeywell CA  
Phone: +(58-2) 238-0211  
FAX: +(58-2) 238-3391

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# Honeywell

## Honeywell

21 Chemin du Vieux Chêne  
38240 Meylan Cedex  
France

## Honeywell

Newhouse Industrial Estate  
Motherwell ML1 5SB  
Lanarkshire, Scotland, U.K.

## Honeywell

11 West Spring Street  
Freeport, Illinois 61032  
USA

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### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

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