Installation Instructions for the 1CPS Series Cable Pull Switch Without Broken Cable Detection

**WARNING**

IF USED IN APPLICATIONS CONCERNING HUMAN SAFETY
- Only use NC direct opening (“positive opening”/“positive break”) contacts, identified by the symbol ☞.
- Do NOT use flexible/adjustable actuators. Only use actuators designed for safety applications.
- Do NOT defeat, tamper, remove, or bypass this switch.
- Hazardous voltage, disconnect power before servicing.
- Strictly adhere to all installation and maintenance instructions.
- Consult with local safety agencies and their requirements when designing a machine-control link, interface, and all control elements that affect safety.
Failure to comply with these instructions could result in death or serious injury.

**WARNING**

IMPROPER USE
- Use the 1CPS Cable Pull Switch Without Broken Cable Detection in stop applications only.
Failure to comply with these instructions could result in death or serious injury.

**WARNING**

IMPROPER SYSTEM PERFORMANCE
- The 1CPS Cable Pull Switch Without Broken Cable Detection provides only the front end switching/sensing function. The machine, its external machine interfaces, and the safety monitoring of the machine and its interfaces, are the responsibility of the machine safety control system.
- The user is SOLELY RESPONSIBLE for determining the appropriate level of risk.
- The 1CPS Cable Pull Switch Without Broken Cable Detection must be installed in a fashion that complies with all codes and standards that are applicable to the particular application of the device. EN 1050 and ANSI TR3 Risk Assessment and Risk Reduction provide assistance on how to perform risk assessment.
Failure to comply with these instructions could result in death or serious injury.

**GENERAL INFORMATION**
- The direct acting switch contacts are held closed when the reset knob is set to RUN. When the actuating cable is pulled, 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. The NC switch contacts remain open until the 1CPS Cable Pull Switch Without Broken Cable Detection is reset by properly tensioning the cable and manually rotating the reset knob.
- When the direct acting switch contacts open, the auxiliary contacts also actuate (open contacts close and closed contacts open). The auxiliary contacts are electrically isolated from the direct acting switch contacts. These NO (Normally Open) contacts may be used for monitoring or signaling.
- Accessory packets are available separately (see Table 2 on page 6).

**STEP 1: MOUNT, WIRE AND SEAL SWITCH**

**WARNING**

IMPROPER OPERATION
- Locate the 2CPS such that the installed cable is visible from the 2CPS reset or inspect the length of the cable whenever a stop is signaled.
- Ensure no barriers or physical obstructions prevent the operator from actuating the 1CPS Cable Pull Switch Without Broken Cable Detection.
Failure to comply with these instructions could result in death or serious injury.

A. Refer to pages 3-6 for:
- Specifications (Table 1).
- Accessories available separately (Table 2).
- Wiring configurations and travel distances (Figure 1).
- Mounting dimensions (Figure 2).
- Installation drawings (Figures 3, 4).

B. Mount switch using four M6, 1/4-28 UNF or 1/4-20 UNC screws or bolts. Torque:
- M6 to 6,1 N m–7,5 N m [54 in lb–66 in lb].
- 1/4-28 UNF to 8,6 N m–10,4 N m [76 in lb–92 in lb].
- 1/4-20 UNC to 7,3 N m–9,0 N m [65 in lb–79 in lb].

C. Refer to the circuit diagram on the switch cover. The diagram depicts the switch contacts when the cable is at proper tension and the reset knob is in the RUN position.
D. Remove the cover plate.

Sensing and Control
E. Wire the switch (use 90 °C [194 °F] wire when
the ambient temperature is over 75 °C [167 °F]):
• Connect 3,5 mm² (12 AWG) or smaller
  stranded or solid wire to the terminals.
• Torque switch terminal screws and ground
  screw to 1,0 N m–1,8 N m [9 in lb–16 in lb].
F. OPTIONAL: Wire the LED indicator. For dc
  indicators, ensure the positive lead wire is red
  and the negative lead wire is black. (There is no
  polarity requirement for ac indicators.)
G. Seal the conduit opening according to the
instructions in PK 80112 (included).
H. Reassemble the cover plate. Torque the cover
screws to 1,5 N m [13 in lb].

STEP 2: INSTALL J-HOOK TURNBUCKLE AND
ACTUATING CABLE
A. Ensure you have the following:
  • Red plastic-coated aircraft cable 3,18 mm
    [1/8 in] diameter to 4,76 mm [3/16 in]
    diameter in desired length.
  • J-hook turnbuckle with locknuts.
  • Thimbles to fit all terminations.
  • Cable clamps to fit all terminations.
B. Attach the hook end of the J-hook turnbuckle to
  the actuator.
C. Attach the eye end of the J-hook turnbuckle to
  the cable using one thimble and one cable
  clamp by fitting the cable in the thimble groove
  and placing the cable clamp as close to the
  thimble as possible.
D. Tighten the cable clamp according to the
  manufacturer’s instructions. (The torque for the
  cable clamp in the accessory packet is 7,3 N m–
  9,0 N m [65 in lb–79 in lb].)
E. Install the cable supports at intervals of no
  greater than 2,4 m [8 ft] along the cable span.
F. Thread the cable through the cable supports.

STEP 4: SECURE THE CABLE TO A FIXED
SUPPORT
A. Ensure you have the following:
  • Thimbles to fit all terminations.
  • Cable supports to fit the cable.
  • Fixed support to fit all terminations.
B. Attach the cable end to a fixed support in the
  same manner as Steps 2.C and 2.D.

STEP 5: ADJUST CABLE TENSION
A. Tighten the turnbuckle until the cable is at the
  desired tension. Ensure that the cable is tight
  enough so that the J-hook turnbuckle can’t
  disengage.
B. Tighten the turnbuckle locknuts.
C. Periodically check and adjust the cable tension.

STEP 6: VERIFY INSTALLATION BY
PERFORMING FUNCTIONAL TESTS
CAUTION
SWITCH DAMAGE
Do not attempt to rotate the reset knob from OFF
to RUN unless the switch is under proper
tension.
Failure to comply with these instructions may
result in product damage.
A. Ensure the cable actuates freely. Ensure the
  installation elements are not subject to
  mechanical damage due to positioning or
  location.
B. Turn the reset knob to RUN.
C. PULLED CABLE STATE: Pull the cable.
  Ensure the reset knob rotates to OFF.
D. Turn the reset knob to RUN.

NOTICE
• After actuation and before resetting the 1CPS,
  the machinery should be inspected along the
  entire length of the actuating cable in order to
  determine the reason for actuation.
TABLE 1

<table>
<thead>
<tr>
<th>Designation and Utilization Category</th>
<th>Rated Operational Current $I_e$ (A) at Rated Operational Voltage $U_e$ (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>24 V</td>
</tr>
<tr>
<td>AC15 A300</td>
<td>--</td>
</tr>
<tr>
<td>DC13 Q300</td>
<td>2.8 A</td>
</tr>
</tbody>
</table>

Rated thermal current ($I_{th}$): 10 A
Rated impulse withstand ($U_{imp}$): 2500 V
Usable gold-plated current: 1 mA to 50 mA, 60 Vdc max/125 Vac max
Sealing: IP67; NEMA 1, 4, 12, 13
Operating temperature range: -25 °C to 80 °C [-13 °F to 176 °F]
Shock: 15 g
Vibration: 10 Hz - 500 Hz, 5 g
Mechanical life: 1,000,000 operations

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/EN60947-1, IEC/EN60947-5-1.

FIGURE 1

1NC/1NO

2NC/2NO

3NC/1NO

4NC

A Left switch  C Pulled cable  **Contact closed**  * Positive Opening to
B Right switch  D Cable tension = 178 N [40 lb]  **Contact open**  IEC/EN60947-5-1
FIGURE 2 mm[in]

All drawings are for reference only.
RUN
OFF
TENSIONED
SLACK

A Optional indicator
B Conduit thread (3 total)
C Mounting pad (4 total)

FIGURE 3 mm[in]

1NC/1NO

A Ground screw

2NC/2NO

3NC/1NO

4NC
FIGURE 4 mm [in]

A 0,46 m [18 in] maximum
B 2,4 m [8 ft] maximum
C 76 m [250 ft] maximum
D Reset knob
E Tension indicator line is in center of indicator window – cable is properly tensioned
F J-hook turnbuckle
G Thimble
H Cable clamp
I Cable support (eyebolt)
J Cable
1CPS Without Broken Cable Detection

TABLE 2

<table>
<thead>
<tr>
<th>Listing</th>
<th>Accessory (Available Separately)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLSZC1</td>
<td>7.6 m [25 ft] cable</td>
</tr>
<tr>
<td>CLSZC2</td>
<td>15.2 m [50 ft] cable</td>
</tr>
<tr>
<td>CLSZC3</td>
<td>30.5 m [100 ft] cable</td>
</tr>
<tr>
<td>CLSZC4</td>
<td>45.7 m [150 ft] cable</td>
</tr>
<tr>
<td>CLSZC5</td>
<td>61.0 m [200 ft] cable</td>
</tr>
<tr>
<td>CLSZC6</td>
<td>76.2 m [250 ft] cable</td>
</tr>
<tr>
<td>CLSZTC</td>
<td>(2) Thimbles</td>
</tr>
<tr>
<td></td>
<td>(2) Low-profile duplex cable clamps</td>
</tr>
<tr>
<td>CPSZK1</td>
<td>(1) J-hook turnbuckle with lock nuts</td>
</tr>
<tr>
<td></td>
<td>(2) Thimbles</td>
</tr>
<tr>
<td></td>
<td>(2) Low-profile duplex cable clamps</td>
</tr>
<tr>
<td></td>
<td>(16) Sets of cable supports (16 1/4-20 eye bolts, 32</td>
</tr>
<tr>
<td></td>
<td>1/4-20 nuts, 32 flat washers, 16 lock washers)</td>
</tr>
<tr>
<td>CPSZTB</td>
<td>(1) J-hook turnbuckle with lock nuts</td>
</tr>
<tr>
<td>CPS-BRACKET</td>
<td>(1) Mounting bracket</td>
</tr>
<tr>
<td>CPSLED24</td>
<td>(1) 24 Vdc multicluster LED</td>
</tr>
<tr>
<td>CPSLED120</td>
<td>(1) 120 Vac multicluster LED</td>
</tr>
</tbody>
</table>

WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Contact your local sales office for warranty information. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace without charge those items it 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.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

For application assistance, current specifications, or name of the nearest Authorized Distributor, check the Honeywell web site or call:
1-800-537-6945 USA
1-800-737-3360 Canada
1-815-235-6847 International
FAX
1-815-235-6545 USA
INTERNET
www.honeywell.com/sensing
info.sc@honeywell.com