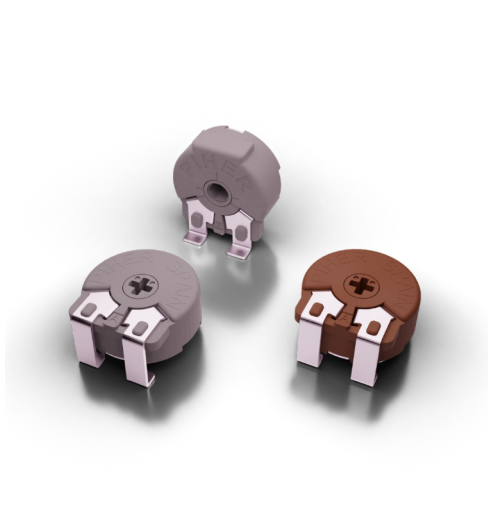


PS-10 / PSC-10

10-mm carbon / cermet SMD potentiometer

The PS-10 and PSC-10 SMD potentiometers offer control where frequent adjustment is required. The shaftless design allows for employment of different engagement mechanisms, such as a customized shaft, a motor control or a human interface adjustment. This potentiometer can also control variable outputs including frequency, change in motor speed or volume.



KEY FEATURES

- ▶ Carbon or cermet resistive element
- ▶ Polyester / Alumina substrate
- ▶ Up to 10,000 life cycles
- ▶ IP54 protection
- ▶ Embossed tape packaging according to IEC 60286-3:2007
- ▶ Wiper positioned at initial, 50% or fully clockwise
- ▶ Linear, logarithmic and antilogarithmic tapers (PSC-10)
- ▶ Self extinguishable plastic (UL 94V-0) available
- ▶ Up to 16 mechanical detents for tactile feedback
- ▶ Locating pins for accurate PCB positioning
- ▶ Low torque version available

On request

- ▶ Shafts and knobs
- ▶ Long life models for control potentiometer applications

ELECTRICAL SPECIFICATIONS

| | PS-10 | PSC-10 |
|--|--------------------------------------|---|
| Taper ¹ | Lin | Lin, Log, Alog |
| Range of values ¹ Lin Log, Alog | 1KΩ ≤ R _n ≤ 1MΩ n/a | 100Ω ≤ R _n ≤ 5MΩ 1KΩ ≤ R _n ≤ 5MΩ |
| Standard tolerance ¹ 100Ω ≤ R _n ≤ 1MΩ 1MΩ < R _n ≤ 5MΩ | ± 30% n/a | ± 20% ± 30% |
| Max. Voltage Lin Log, Alog | 200 Vdc n/a | 200 Vdc 100 Vdc |
| Nominal power | 50°C (122°F) 0.15 W | 70°C (158°F) 0.33 W |
| Residual resistance ¹ | ≤ 0.5% R _n (5Ω min.) | |
| Equivalent noise resistance | ≤ 3% R _n (3Ω min.) | |
| Operating temperature ¹ | -40°C to +85°C (-13°F to + 158°F) | -40°C to +90°C ² (-40°F to + 194°F) |

¹ Others available on request ² +120°C/+248°F upon request

APPLICATIONS

- ▶ Appliance program selection
- ▶ Thermostat adjustment
- ▶ Timer and control relays
- ▶ Consumer electronics
- ▶ Power tool controls
- ▶ Test and measurement equipment
- ▶ Small engines
- ▶ Robotics
- ▶ Medical Equipment Control

PS-10 / PSC-10

10-mm carbon / cermet SMD potentiometer

MECHANICAL SPECIFICATIONS

| | PT-10 | PTC-10 |
|------------------------------|---|--------|
| Mechanical rotation angle | 235° ± 5° | |
| Electrical rotation angle | 220° ± 20° | |
| Torque Rotational Stop | 0.4 to 2 Ncm (0.6 to 2.7 in-oz) > 5 Ncm (>7 in-oz) | |
| Life ¹ | Up to 10k cycles | |

¹ Others check availability

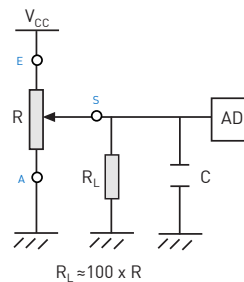
ENVIRONMENTAL TESTING

| | Test method (CEI 393-1) | PS-10 ΔR(%)- typical test results | PSC-10 ΔR(%)- typical test results |
|-------------------------|--|---------------------------------------|--|
| Electrical life | 1.000h at 50°C; 0.15W 1.000h at 70°C; 0.33W | ±10% n/a | n/a ±5% |
| Mechanical life | 1000 cycles at 10 to 15 cpm | ±10% | ±3% (Rn < 1MΩ) |
| Temperature coefficient | -40°C; +90°C -40°C; +85°C -25°C; +70°C | n/a ±1.500 ppm/°C ±1.000 ppm/°C | ±100 ppm/°C (Rn < 100KΩ) n/a n/a |
| Thermal cycling | 16h at 90°C and 2h at -40°C | ±5% | ±2.5% |
| Damp heat | 500h at 40°C and 95% relative humidity (RH) | ±15% | ±5% |
| Vibration | 2h each plane at 10Hz - 55Hz | ±3% | ±2% |
| Storage | 6 month at 23°C ±2°C and 50% RH | ±5% | ±5% |

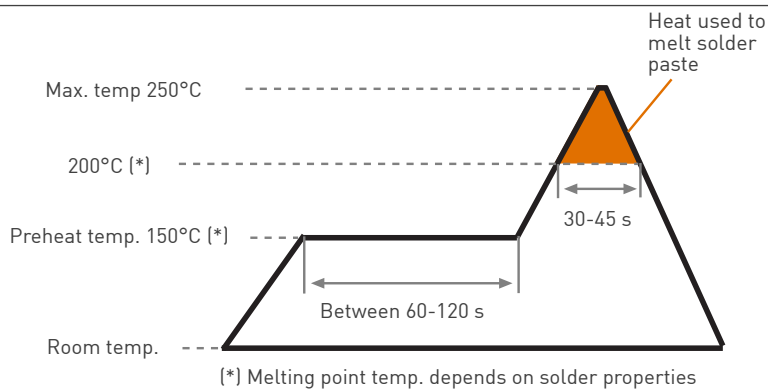
Out of range values may not comply with these results. Standard test conditions: temperature: 23°C ±2°C and 45% to 70% RH

RECOMMENDED CONNECTIONS

Recommended connection circuit for a position sensor or control application (voltage divider circuit electronic design).



RECOMMENDED REFLOW PROFILE



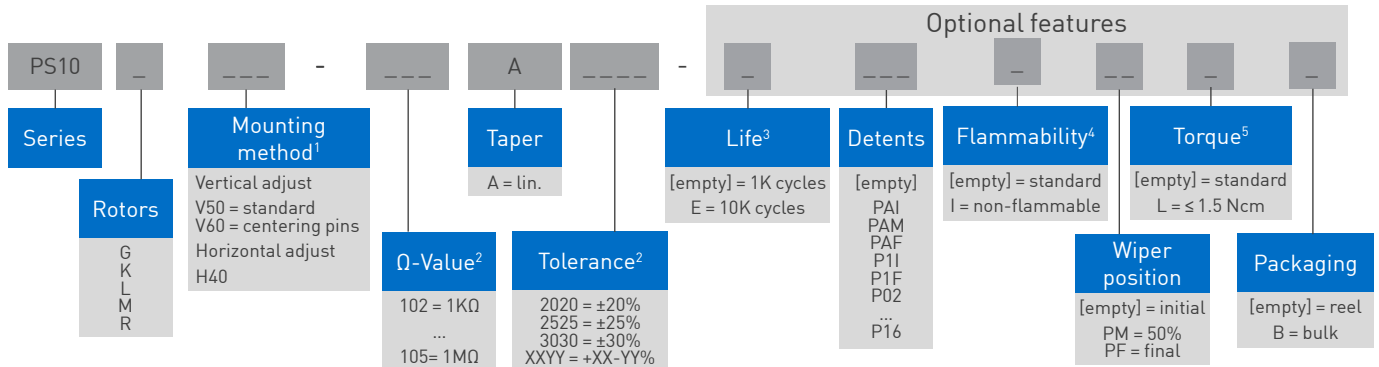
The recommended reflow profile is provided as a guideline. Optimal profile may differ due to oven type, assembly layout or other design or process variables. Customers should verify actual device performance in their specific application and reflow process. Please contact Piher if you require additional support.

PS-10 / PSC-10

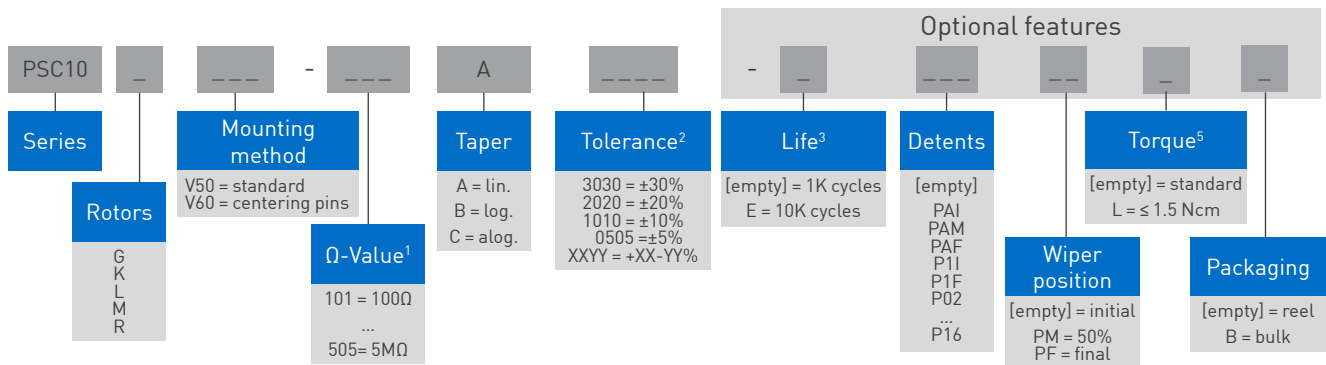
10-mm carbon / cermet SMD potentiometer

HOW TO ORDER

Carbon potentiometer (Example: PS10LV50-102A3030)



Cermet potentiometer (Example: PSC10LV50-102A2020)



1. Q- Value: XX - First two digits of Q-value; XX - Number of zeros
2. Tolerance: For custom tolerance, please check availability: info@piher.net
3. Life: Higher on request.
4. Non-flammable according to UL 94V-0: housing and rotor. PS10 horizontal adjust model is only available with standard plastic. PSC-10 made of non-flammable material by standard.
5. Torque: No detent option available for low torque models.

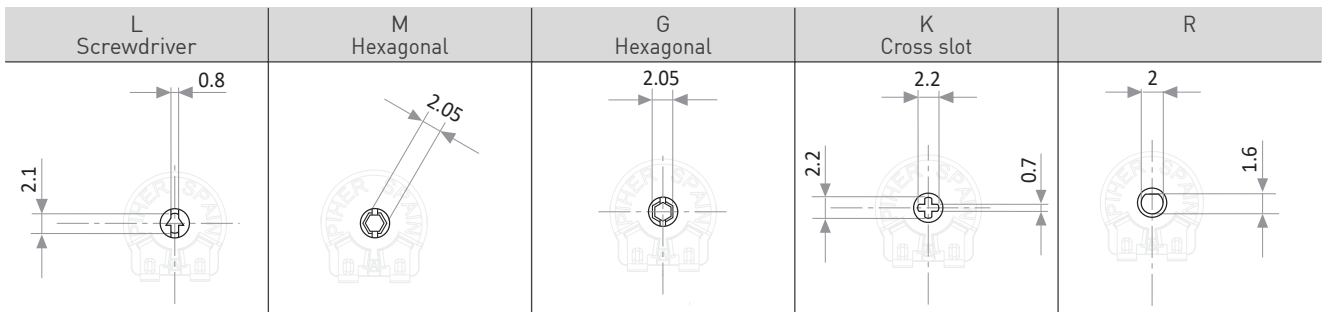
STANDARD CONFIGURATION

| | PS-10 | PSC-10 |
|-----------------------|---|--------|
| Life | 1.000 cycles | |
| Non-flammable plastic | no | yes |
| Detents | none | |
| Packaging | reel | |
| Wiper Position | initial | |
| Housing color | dark grey | brown |
| Rotor color | dark grey | brown |
| Torque | 0.4 to 2 Ncm | |
| Linearity | not controlled | |
| Shafts/thumb wheels | Available separately, see PT-10 datasheet for possible options. They must be inserted after the reflow soldering process. | |

PS-10 / PSC-10

10-mm carbon / cermet SMD potentiometer

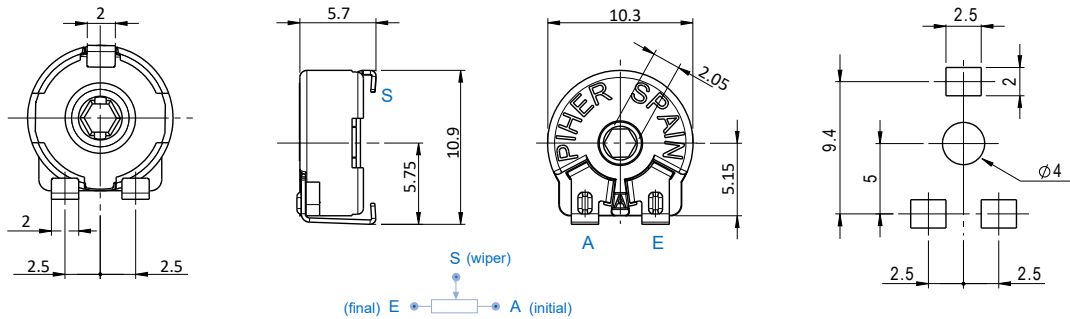
ROTORS



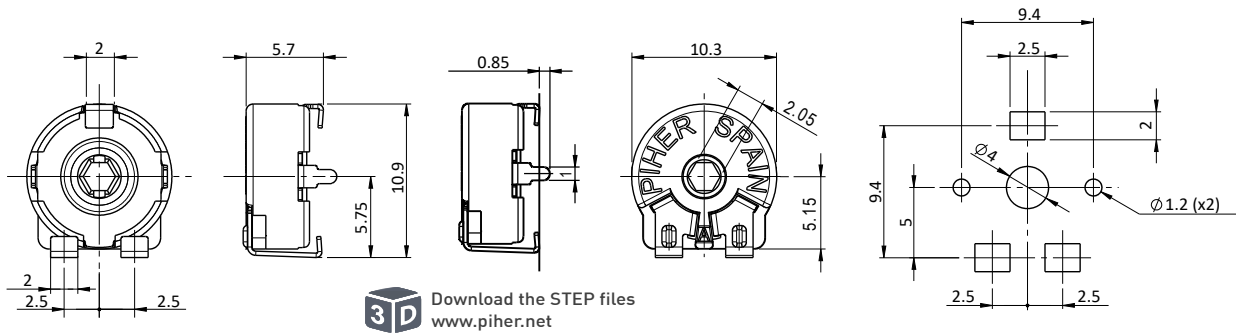
Default delivery is at initial position. Wipers are shown positioned at 50% for the picture.

MOUNTING METHOD

V50 - without centering pins



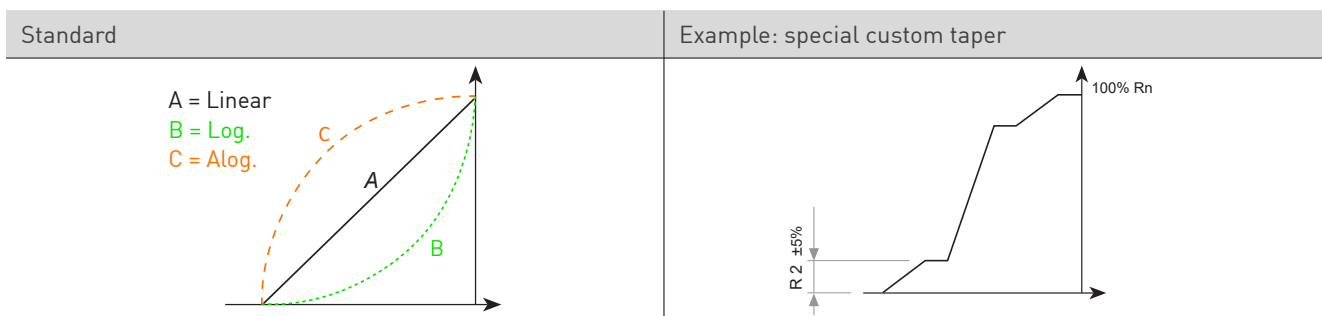
V60 - with centering pins



STANDARD RESISTANCE-VALUES AND TOLERANCES

| Resistance Ω | 100 | 200 | 220 | 250 | 470 | 500 | 1K | 2K | 2.2K | 2.5K | 4.7K | 5K | 10K | 20K | 22K | 25K | 47K | 50K | 100K | 200K | 220K | 250K | 470K | 500K | 1M | 2M | 2.5M | 4.7M | 5M |
|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|-----|-----|------|------|-----|
| Order Code | 101 | 201 | 221 | 251 | 471 | 501 | 102 | 202 | 222 | 252 | 472 | 502 | 103 | 203 | 223 | 253 | 473 | 503 | 104 | 204 | 224 | 254 | 474 | 504 | 105 | 205 | 255 | 475 | 505 |
| Tolerance [PS-10] | 30% | | | | | | | | | | | | | | | | | | | | | | | | n/a | | | | |
| Tolerance [PSC-10] | 20% | | | | | | | | | | | | | | | | | | | | | | | | 30% | | | | |

TAPERS



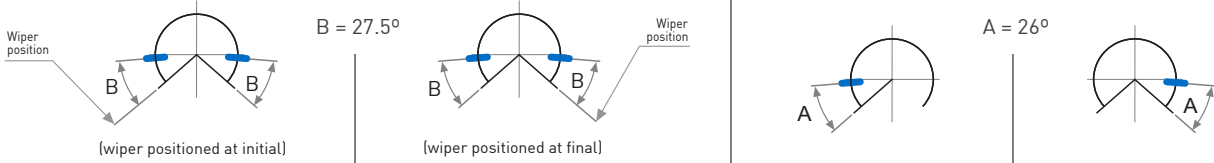
For PS-10 only linear taper. For more information on custom tapers contact Piher Sensing Systems.

PS-10 / PSC-10

10-mm carbon / cermet SMD potentiometer

DETENTS

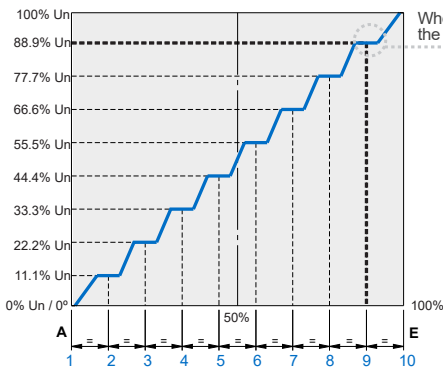
| PAM | P1i | P1F | P02 | P03 | P04 | P05 |
|-----|-----|-----|-----|-----|-----|-----|
| | | | | | | |
| P06 | P07 | P08 | P09 | P10 | P11 | P16 |
| | | | | | | |
| PAI | | PAF | | PID | | PFD |



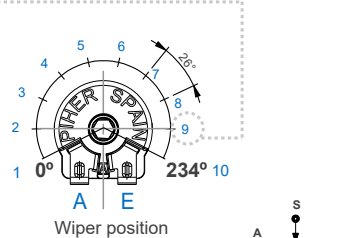
— Relative detent positions along total mechanical travel

- Standard mechanical life is 500 cycles.
- Long life versions are available upon request and have the following characteristics at T_p: Potentiometers with 1 to 3 detents up to 10K cycles; Potentiometers with 4 and more detents up to 5K cycles
- Different output voltage values can be matched at each detent position (see next section).
- Please consult your nearest Piher supplier if unique non-overlapping values at each detent position or LOG/ALOG tapers are required.
- Detent torque can vary from 1.2 to 2.5 times the standard potentiometer torque.
- For more than 16 detents or special detent positions please contact Piher Sensing Systems.

STEPPED OUTPUTS / CONSTANT VALUE ZONES



When the potentiometer's wiper is located at detent n°9, the output voltage will be 88.9% Un \pm 1% tolerance.

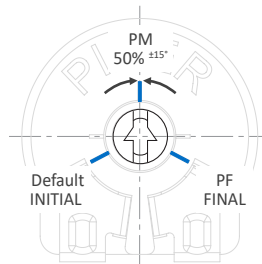


IMPROVED REPEATABILITY

Constant value zones can be combined with strategically located mechanical detents to provide exact alignment between the electrical output (flat areas) and the mechanical detent position. This provides clear mechanical positions that are not only repeatable, but perfectly aligned electrical outputs at each of the (detent) angles. The detents also prevent output values from changing due to vibration or accidental rotor movements. The result is a higher level of precision in controlling lighting, temperature, motor or other electronic control systems.

Contact Piher Sensing Systems for ordering information.

POSITIONING



Wiper positioning on initial position is standard. Special delivery positions available on request.

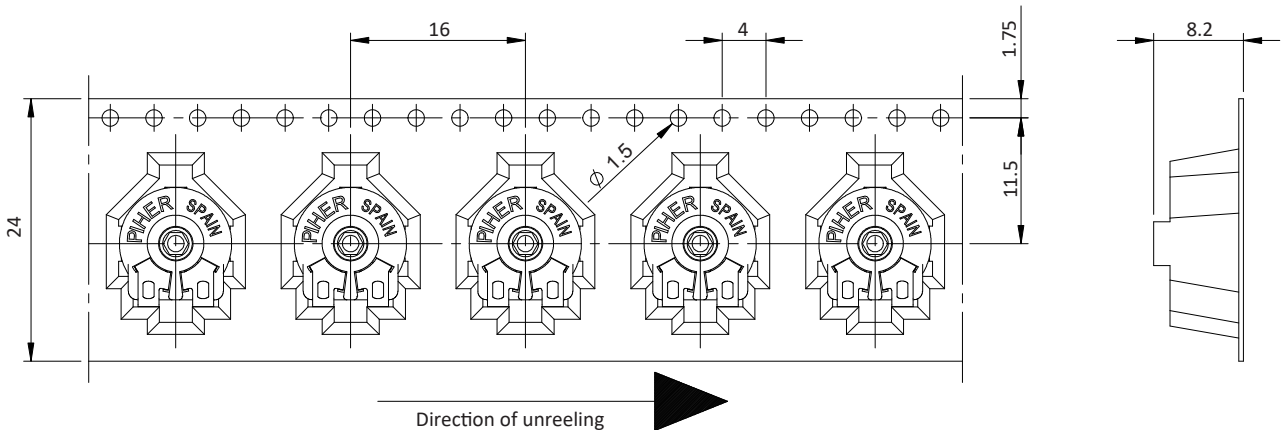
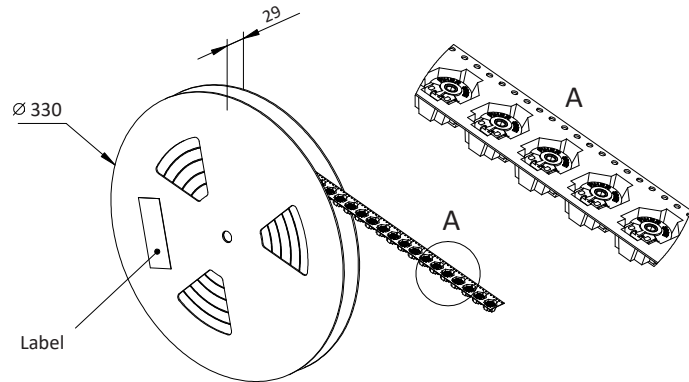
PS-10 / PSC-10

10-mm carbon / cermet SMD potentiometer

PACKAGING

Bulk (500 pcs/box)

Reel - embossed tape (500 pcs/reel)



OUR ADVANTAGE

- ▶ Leading-edge innovative position sensing solutions
 - ▷ Contactless (Hall-effect and Inductive Technology)
 - ▷ Contacting (Potentiometers, Printed Electronics)
- ▶ Engineering design-in support
- ▶ All our products can be customized to fit target application and customer requirement
- ▶ Capability to move seamlessly from development to true high-volume production
- ▶ A global footprint with global engineering and commercial support
- ▶ One-stop shop not limited to position sensors (temperature, pressure, gas,...) through group collaboration
- ▶ Flexibility and entrepreneurship of a medium-sized company with the backing of Amphenol Corporation



Please always use the latest updated datasheets and 3D models published on our website.

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