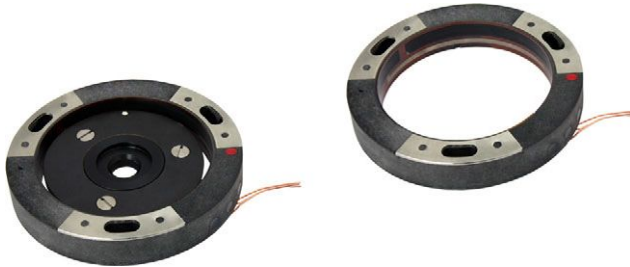


Kit Potentiometer Rotational Analog Displacement Sensor



FEATURES

- Conductive plastic potentiometer technology, infinite resolution
- Analog or digital output
- Low height
- High flexibility of wires
- Applicable standards: NFC 93255, MIL R39023

QUICK REFERENCE DATA

| | |
|------------------|---|
| Sensor type | ROTATIONAL, conductive plastic |
| Output type | Output by wires |
| Market appliance | Industrial, avionics |
| Dimensions | 16 mm, 18 mm, 22 mm, 23 mm, 27 mm, 40 mm, 85 mm |

ELECTRICAL SPECIFICATIONS FOR KITPR016, KITPR018 (H22)

| PARAMETER | KITPR016 | | | | KITPR018 (H22) | | | | |
|--|-------------------------------|----------------|---------|-------------------------------------|-----------------|----------|-----------------|---------|---------|
| | Total electrical travel | 60° | 88° | 95° | 200° | 287° 30' | 340° | 340° | 340° |
| Useful electrical travel | 20° | 74° | 95° | 197° | 230° | 337° | 340° | 340° | 348° |
| Linearity | ± 0.5 % | ± 0.5 % | ± 0.5 % | ± 0.5 % | ± 0.25 % | ± 0.1 % | ± 0.25 % | ± 0.5 % | ± 0.1 % |
| Operating voltage | ± 10 V ± 0.02 V | | | | | | | | |
| Gradient | - | - | - | - | - | - | - | - | - |
| Total resistance range (R _n) | 4.7 kΩ | 4.7 kΩ | 4.7 kΩ | 470 Ω | 2 kΩ | 4.7 kΩ | 2.2 kΩ | 10 kΩ | 10 kΩ |
| Tolerance on R _n | ± 20 % | ± 10 % | ± 20 % | ± 10 % | ± 12.5 % | ± 10 % | ± 12.5 % | ± 10 % | ± 20 % |
| Output smoothness | ≤ 0.1 % | | | | | | | | |
| Power rating | 0.1 W at 80 °C | 0.2 W at 80 °C | - | - | 0.75 W at 85 °C | - | 0.75 W at 85 °C | - | - |
| Temperature coefficient | -300 ppm/°C ± 300 ppm/°C | | | | | | | | |
| Wiper current | ≤ 1 mA | | | | | | | | |
| Recommended load impedance | ≥ 1000 R _n | | | | | | | | |
| Insulation resistance | ≥ 1 GΩ at 100 V _{DC} | | | ≥ 10 GΩ at 500 V _{DC} | | | | | |
| Dielectric strength | - | | | 750 V _{RMS} , 50 Hz, 1 min | | | | | |

ELECTRICAL SPECIFICATIONS FOR KITPR022 (PR22), KITPR023 (H27), KITPR027 (PR27), KITPR040, KITPR085

| PARAMETER | KITPR022 (PR22) | KITPR023 (H27) | KITPR027 (PR27) | KITPR040 | KITPR085 | | | |
|--|-------------------------------------|----------------|-----------------|-----------------|-------------------------------------|--------|-----------------|-----------------|
| Total electrical travel | 130° | 340° | 120° | 124° | 330° | 345° | 100° ± 2° | 25° |
| Useful electrical travel | 120° | 340° | 90° | 120° | 180° | 300° | 90° | 16° |
| Linearity | ± 0.25 % | ± 1 % | ± 0.5 % | ± 1 % | ± 0.3 % | ± 1 % | ± 0.1 % | ± 0.08 % |
| Operating voltage | ± 10 V ± 0.02 V | | | | | | | |
| Gradient | - | - | - | - | - | - | 0.2 V/° ± 0.2 % | 0.8 V/° ± 0.1 % |
| Total resistance range (R _n) | 5 kΩ | 4.7 kΩ | 2.2 kΩ | 5 kΩ | 4.7 kΩ | 10 kΩ | 2.5 kΩ | |
| Tolerance on R _n | ± 10 % | ± 10 % | - | ± 10 % | ± 10 % | ± 10 % | ± 10 % | ± 20 % |
| Output smoothness | ≤ 0.1 % | | | | | | | |
| Power rating | - | - | 1.25 W at 70 °C | 1.25 W at 70 °C | 0.6 W at 70 °C | - | - | - |
| Temperature coefficient | -300 ppm/°C ± 300 ppm/°C | | | | | | | |
| Wiper current | ≤ 1 mA | | | | | | | |
| Recommended load impedance | ≥ 1000 R _n | | | | | | | |
| Insulation resistance | ≥ 10 GΩ at 500 V _{DC} | | | | | | | |
| Dielectric strength | 750 V _{RMS} , 50 Hz, 1 min | | | | 500 V _{RMS} , 50 Hz, 1 min | | | |



| MECHANICAL SPECIFICATIONS FOR KITPR016, KITPR018 (H22) | | |
|--|---------------|----------------|
| PARAMETER | KITPR016 | KITPR018 (H22) |
| Mechanical travel | - | - |
| Backlash | < 3' | - |
| Repeatability | - | - |
| Running and starting torque | ≤ 2 cN.cm | ≤ 3 cN.cm |
| Weight | 0.7 g ± 0.1 g | 4.2 g ± 0.5 g |

| MECHANICAL SPECIFICATIONS FOR KITPR022 (PR22), KITPR023 (H27), KITPR027 (PR27), KITPR040, KITPR085 | | | | | | |
|--|-----------------|------------|----------------|-----------------|--------------|------------|
| PARAMETER | KITPR022 (PR22) | | KITPR023 (H27) | KITPR027 (PR27) | KITPR040 | KITPR085 |
| | TET = 130° | TET = 340° | | | | |
| Mechanical travel | 360° | - | - | 360° | 110° max. | - |
| Backlash | - | ≤ 0.05° | - | - | < 0.02° | < 1.2° |
| Repeatability | - | - | - | - | < 0.01° | - |
| Running and starting torque | ≤ 10 cN.cm | ≤ 12 cN.cm | - | - | ≤ 5.65 cN.cm | < 1.2 mN.m |
| Weight | ≤ 10 g | - | ≤ 15 g | - | 12 g ± 1 g | 75 g ± 5 g |

| PERFORMANCE FOR KITPR016, KITPR018 (H22) | | |
|---|------------------|-------------------|
| PARAMETER | KITPR016 | KITPR018 (H22) |
| Operating temperature range | -46 °C to +71 °C | -55 °C to +125 °C |
| Storage temperature range | -46 °C to +71 °C | -55 °C to +125 °C |
| Rotation humidity (max.) | 55 % ± 20 % | 5 % to 95 % |
| Thermal deviation at U/2 over operational temperature range | - | - |

Note

- Nothing stated herein shall be construed as a guarantee of quality or durability

| PERFORMANCE FOR KITPR022 (PR22), KITPR023 (H27), KITPR027 (PR27), KITPR040, KITPR085 | | | | | | |
|--|------------------|-------------------|------------------|------------------|------------------|------------------|
| PARAMETER | KITPR022 (PR22) | KITPR023 (H27) | | KITPR027 (PR27) | KITPR040 | KITPR085 |
| | | TET = 120° | TET = 124° | | | |
| Operating temperature range | -40 °C to +85 °C | -55 °C to +90 °C | -54 °C to +71 °C | -40 °C to +85 °C | -40 °C to +85 °C | -43 °C to +90 °C |
| Storage temperature range | -40 °C to +85 °C | -55 °C to +125 °C | -64 °C to +90 °C | -40 °C to +85 °C | -46 °C to +71 °C | -55 °C to +90 °C |
| Rotation humidity (max.) | - | - | - | - | 5 % to 95 % | - |
| Thermal deviation at U/2 over operational temperature range | - | - | - | - | ≤ 0.04 % | - |

Note

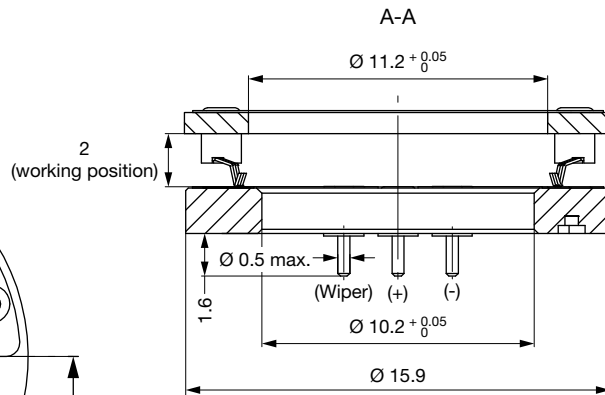
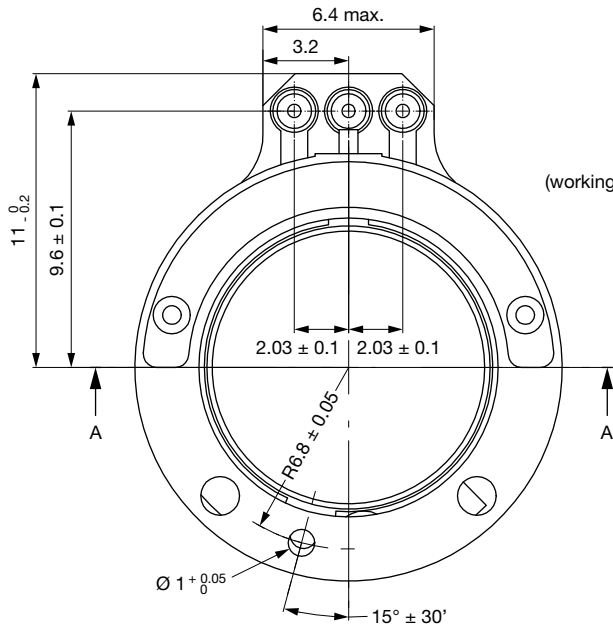
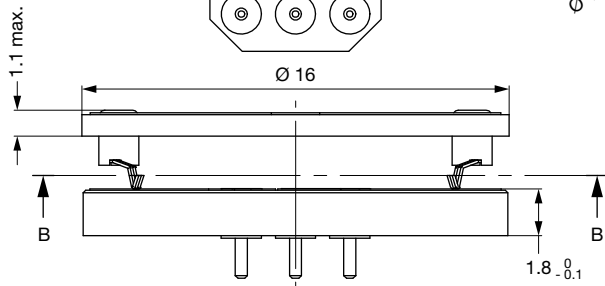
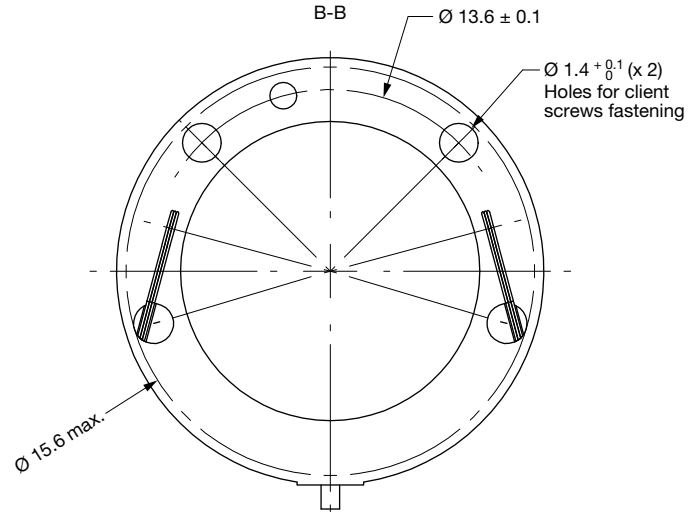
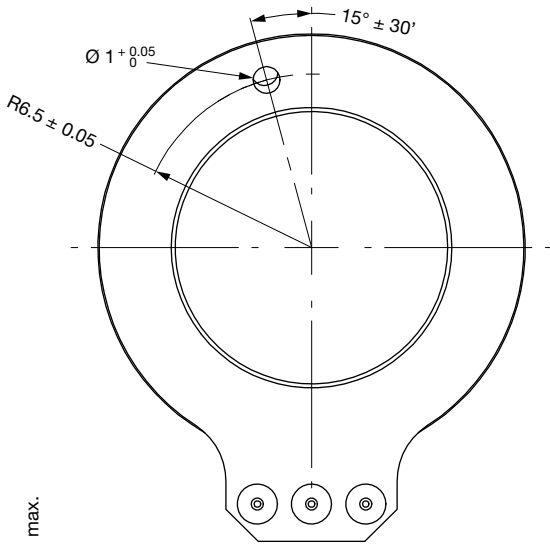
- Nothing stated herein shall be construed as a guarantee of quality or durability

| SAP PART NUMBERING GUIDELINES | | | | | | | | |
|-------------------------------|----------------|-----------|----------|-----------|------------|----------------------|---|------------|
| MODEL | TYPE | SIZE | FUNCTION | VALUE | LINEARITY | PACKAGING | 3 DIGITS | |
| KITP | R = rotational | 016 | 1 | 472 = 4K7 | B = 0.5 % | B = box (1 piece) | To consult Vishay for dedicated 3 digits | |
| | | | | 103 = 10K | D = 0.1 % | | | |
| | | 018 | | 202 = 2K0 | C = 0.25 % | | | |
| | | | | 222 = 2K2 | B = 0.5 % | | | |
| | | | | 471 = 470 | | | | |
| | | 022 | | 472 = 4K7 | A = 1 % | | | |
| | | | | 103 = 10K | | | | |
| | | | | 472 = 4K7 | | | | |
| | | | | 502 = 5K0 | | | | C = 0.25 % |
| | | | | 502 = 5K0 | | | | A = 1 % |
| | | 023 | | 222 = 2K2 | B = 0.5 % | | | |
| | | | | 472 = 4K7 | A = 1 % | | | |
| | | 027 | | 472 = 4K7 | P = 0.3 % | | | |
| | | | | | D = 0.1 % | | | |
| 040 | 103 = 10K | D = 0.1 % | | | | | | |
| 085 | 252 = 2K5 | U | | | | | | |

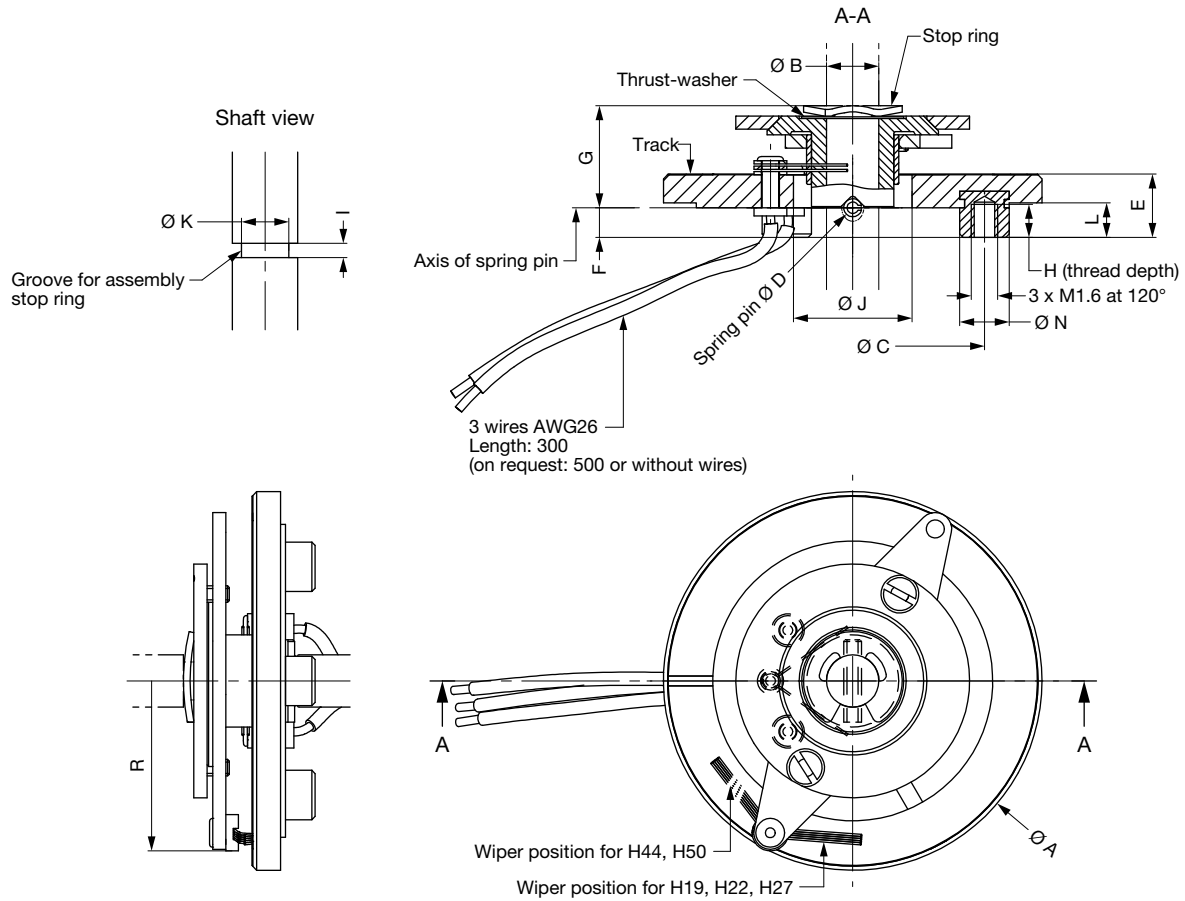
Note

- See "Electrical Specifications" for the angle

DIMENSIONS in millimeters

KITPR016


DIMENSIONS in millimeters

KITPR018 (H22), KITPR023 (H27), KITPR035 (H44)


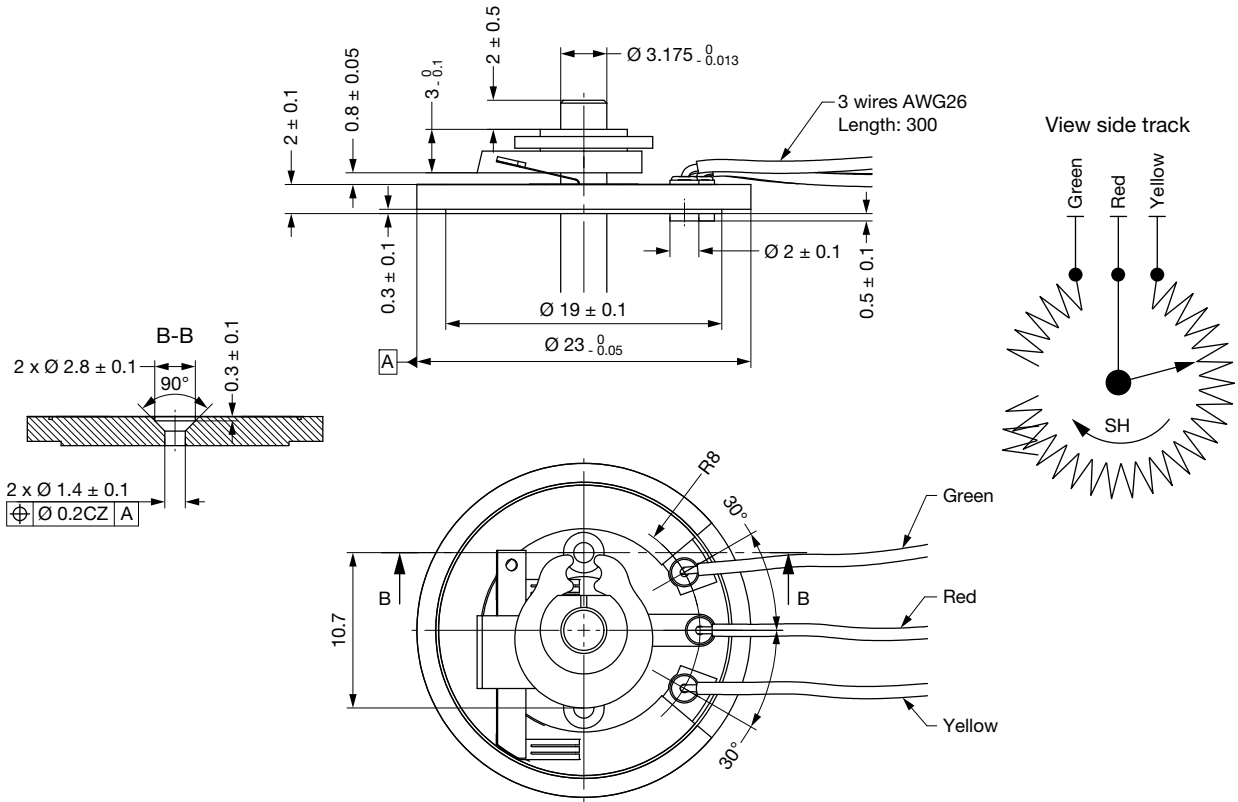
| DIMENSION | TYPE | | | ON REQUEST | |
|-------------------|-----------------|------------------|------------------|-----------------|------------------|
| | KITPR018 (H22) | KITPR023 (H27) | KITPR035 (H44) | KITPR015 (H19) | KITPR042 (H50) |
| A (0 / -0.05) | 18 | 23 | 35 | 15 | 42 |
| B (+0.012 / 0) | 3.175 | 3.175 | 6.35 | 3.175 | 6.35 |
| C ± 0.1 | 12 | 16 | 28 | 11.5 | 34 |
| D ± 0.1 | 1 | 1 | 1.5 | 1 | 1.5 |
| E ± 0.2 | 3.8 | 3.8 | 5.8 | 5 | 6.8 |
| F ± 0.1 | 1.8 | 1.8 | 2.9 | 4.1 | 4.3 |
| G (+0.1 / 0) | 6.2 | 6.2 | 8.6 | 6.2 | 8.6 |
| H _{min.} | 2 | 2 | 3.5 | 2.5 | 3.5 |
| I | 0.7 (+0.05 / 0) | 0.7 (+0.05 / 0) | 1.05 (+0.07 / 0) | 0.7 (+0.05 / 0) | 1.05 (+0.07 / 0) |
| J ± 0.05 | 7.2 | 7.2 | 11.2 | 5.7 | 13.2 |
| K (+0.05 / 0) | 2.3 | 2.3 | 4.8 | 2.3 | 4.8 |
| L _{max.} | 2.2 | 2.2 | 3.2 | 3.2 | 3.2 |
| N _{max.} | 3 | 3 ⁽¹⁾ | 4.1 | 3 | 3.9 |
| R _{max.} | 9.2 | 11.7 | 17.9 | 7.7 | 20.8 |

Note

- On request: Ø 2.5 with 3 x M1.2

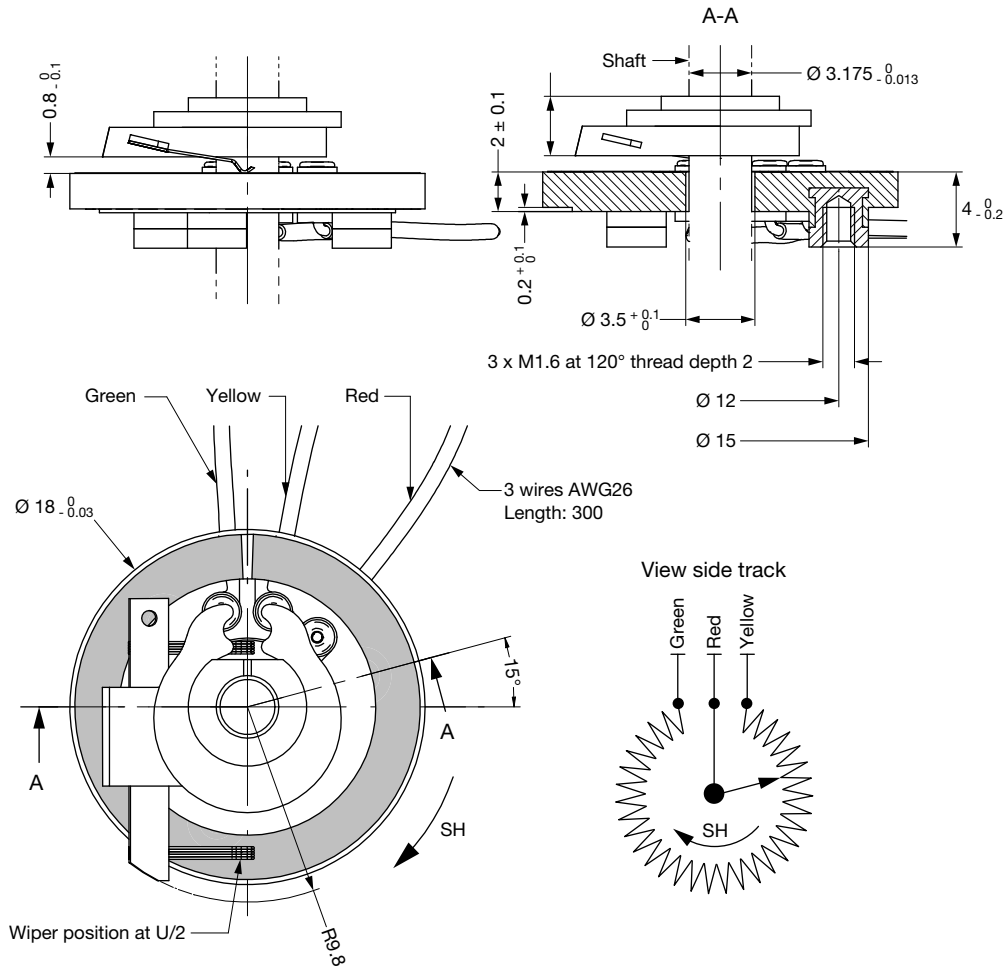
DIMENSIONS in millimeters

DESIGN ON REQUEST FOR KITPR023



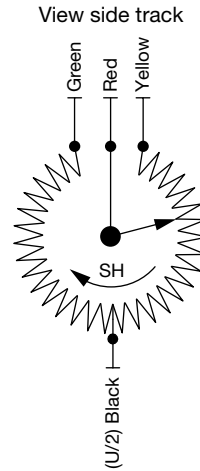
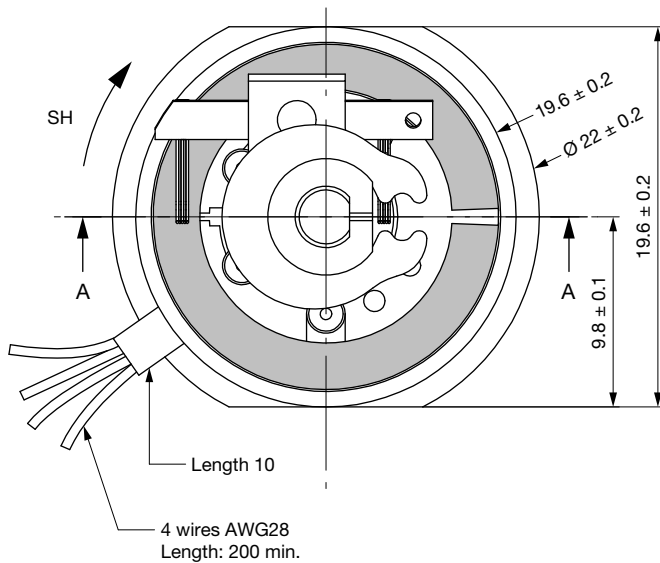
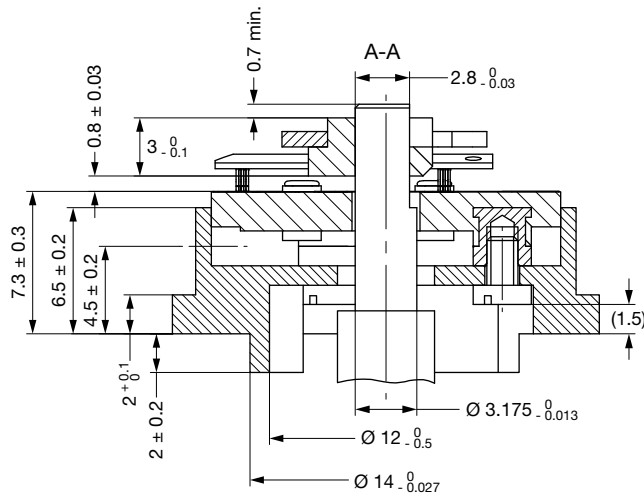
DIMENSIONS in millimeters

KITPR022



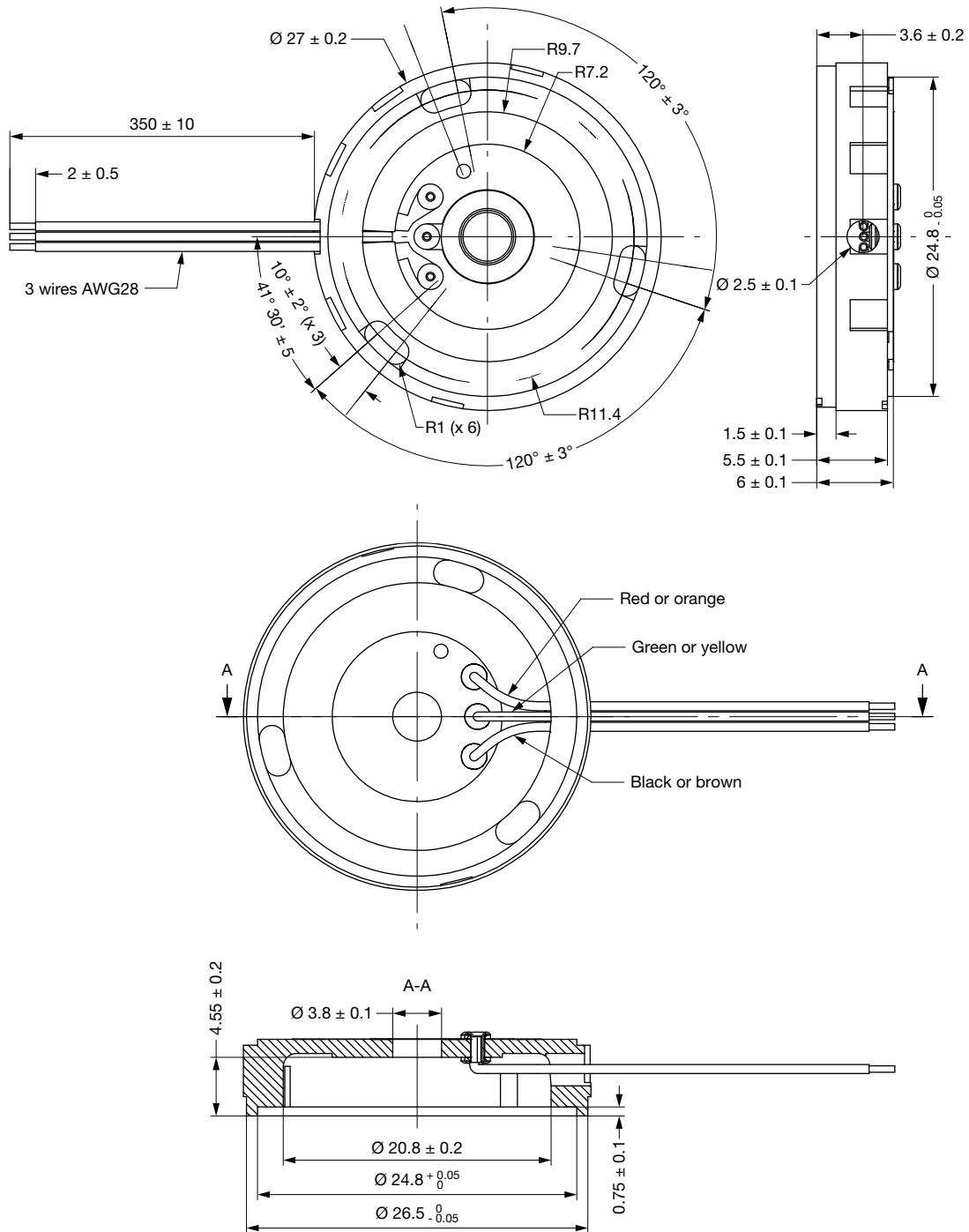
DIMENSIONS in millimeters

DESIGN ON REQUEST FOR KITPR022



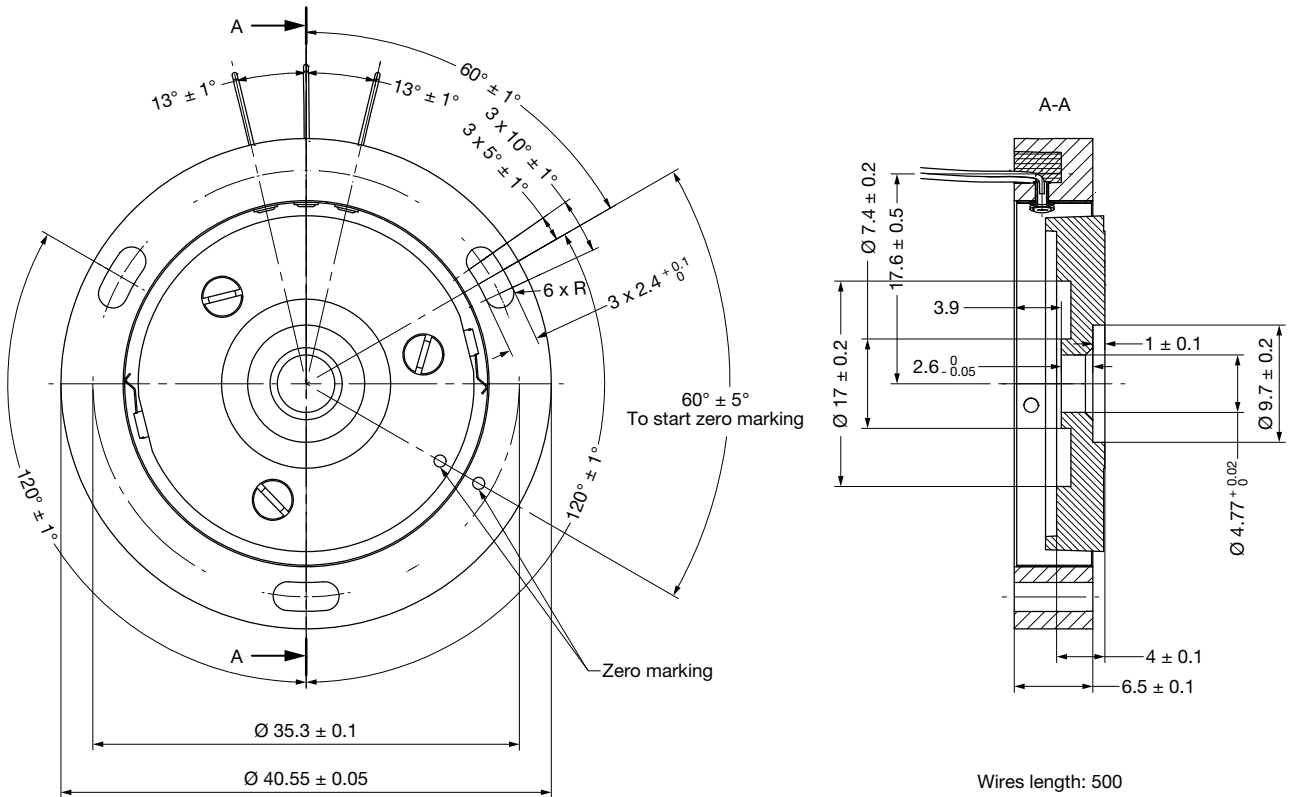
DIMENSIONS in millimeters

KITPR027

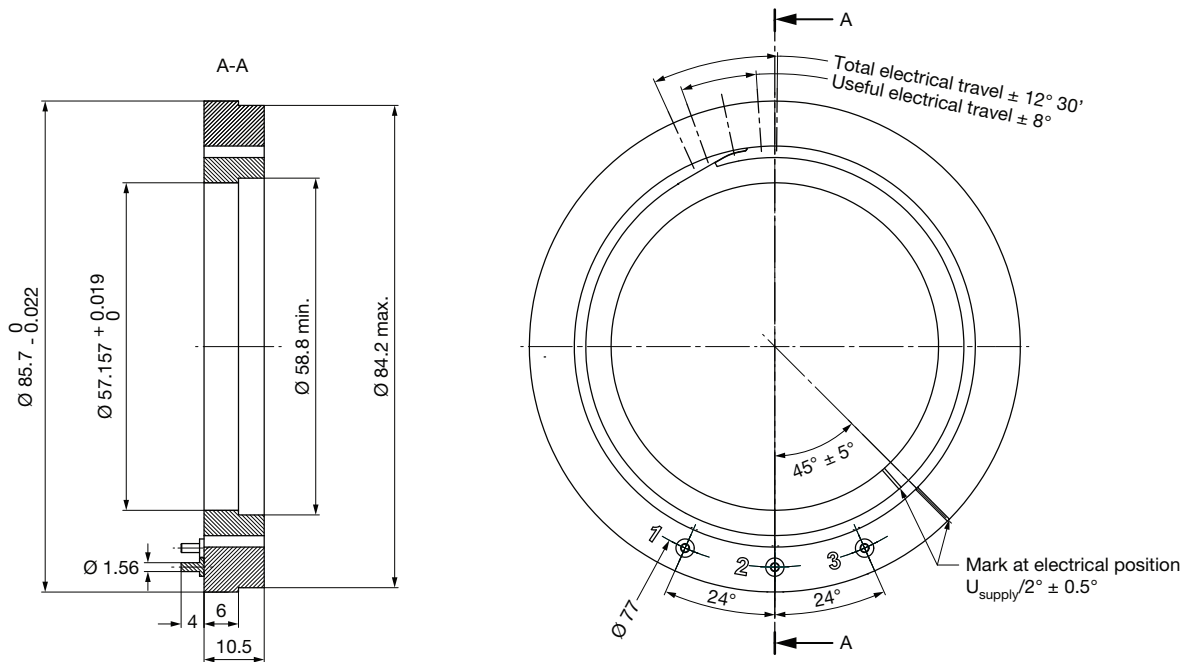


DIMENSIONS in millimeters

KITPR040 (Analog Output)

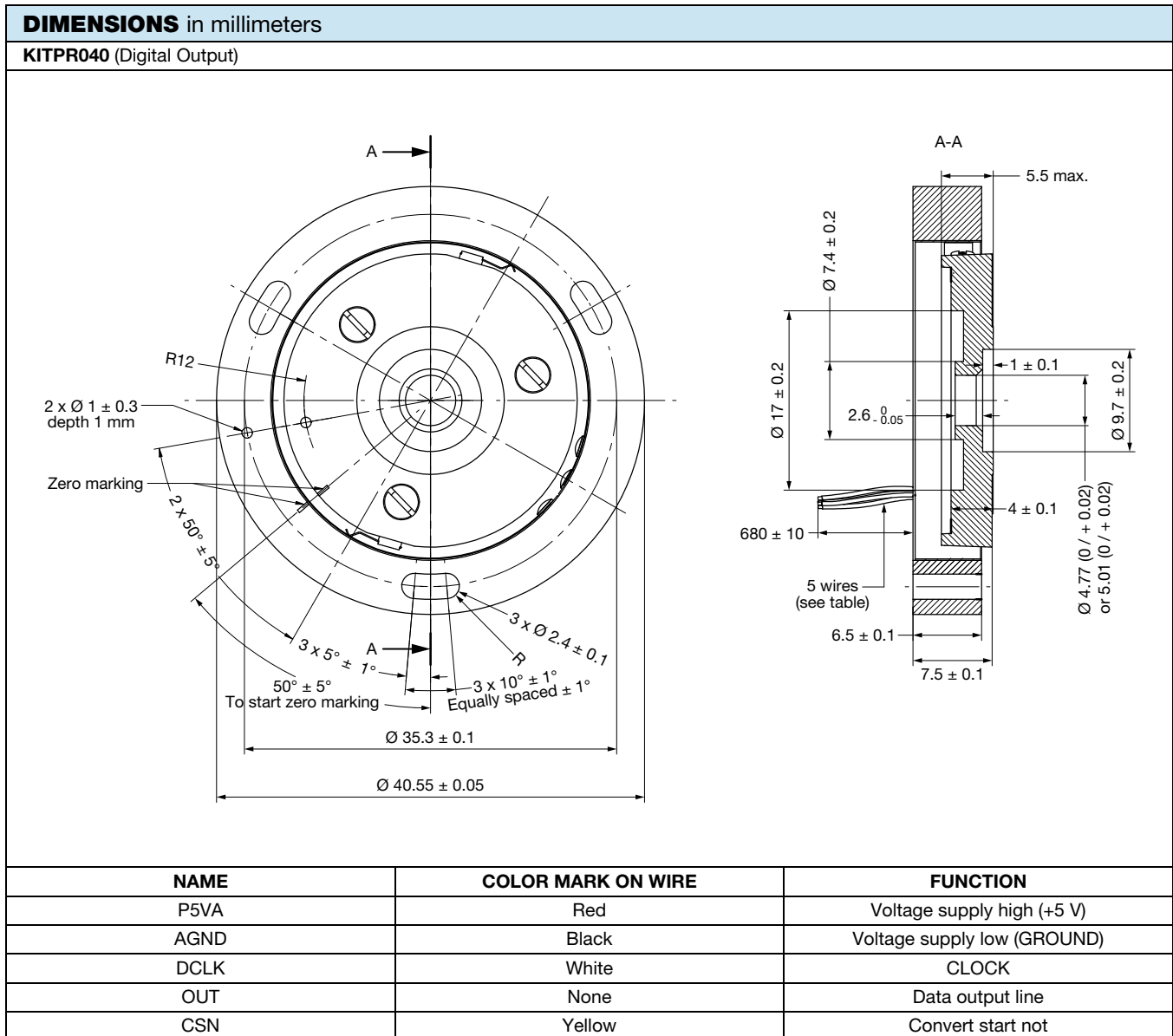


KITPR085 (Analog Output)



OPTIONS (on request)

- Other ohmic values (R_n)
 - Other tolerances on R_n
 - Other linearities
 - Other theoretical electrical travels
 - Other dimensions
 - Middle tap: KITPR022 $U/2 \pm 1^\circ$
- KITPR040: digital output SPI
 - Operating voltage: $5\text{ V} \pm 5\%$
 - with absolute linearity $\pm 0.1^\circ$ max. within $\pm 39.9^\circ$
 $\pm 0.2^\circ$ max. from -45° to -40°
 $\pm 0.2^\circ$ max. from $+40^\circ$ to $+45^\circ$
 - Thermal deviation at $U/2$ over operational temperature range $\leq 0.05^\circ$
 - Gradient at $\pm 45^\circ$: 655.36 bits/ $^\circ$
 - Weight: $12.5\text{ g} \pm 1.5\text{ g}$
 - Power dissipation: 150 mW min.
 - Current supply: 12 mA max.





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