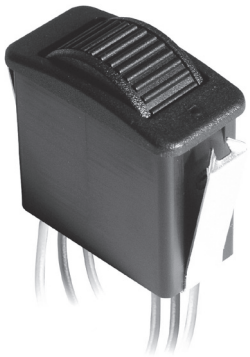
# HTW Return-to-Center Thumbwheel

The HTW is a spring return-to-center, single axis, Hall effect proportional output thumbwheel with an actuator that provides linear change in voltage output in either direction from the center. Available with eight output options, including increasing and decreasing voltage output from the center position to the full travel position and single or dual *(redundant)* outputs. The HTW snaps into a 1.47" x 0.710" panel opening with rocker switch style mounting. This switch has been tested up to 3 million cycles, its electronics are sealed to IP6K8S, and it has excellent EMI/RFI immunity.



Knurled Wheel



Paddle Wheel

**FEATURES:**

- Eight output options plus six tighter center tolerance options
- Spring return-to-center single axis actuator
- Snaps into 1.47" x 0.710" panel opening
- Rocker switch style mounting
- Up to 3 million cycle rotational life
- Electronics sealed to IP6K8S
- Excellent EMI/RFI immunity
- Detent options available
- RoHS compliant

| Standard Characteristics/Ratings: | | | | |
|---|---|---|---|---|
| MECHANICAL: | | | | |
| **Mechanical Life:** | Up to 3,000,000 full forward to full back | | | |
| **Mechanical Detent Cycle Life Per Detent:** | 100,000 *(detent @ +/- 21°, full travel is +/- 30° max)* | | | |
| **Max Allowable Radial Load:** | 30.0 lbs. | | | |
| ELECTRICAL RATINGS: Rated at Vcc = 5V @ 25°C Load = 1mA *(4.7KΩ)* | | | | |
| **Electrical** | **Units** | **Min** | **Typ** | **Max** |
| Supply Voltage | VDC | 4.50 | 5 | 5.50 |
| Output Voltage Tolerance at Center *(A, B, C, D, E, F, G and H)* | VDC @ 5V Vcc | -0.15 | N/A | +0.15 |
| Output Voltage Tolerance at Center *(J, K, L, M, N and P)* | VDC @ 5V Vcc | -0.10 | N/A | +0.10 |
| Output Voltage Tolerance at Center *(for detent version A only)* | VDC @ 5V Vcc | -0.25 | N/A | +0.25 |
| Output Voltage Tolerance Full Travel | VDC @ 5V Vcc | -0.25 | N/A | +0.25 |
| Supply Current Options A & D | mA | N/A | N/A | 10 |
| B=0, Vcc=5V, Iout=0 | | | | |
| Supply Current For all Other Options | mA | N/A | N/A | 20 |
| B=0, Vcc=5V, Iout=0 | | | | |
| **Reverse Voltage Protection:** | -5VDC max | | | |
| ELECTRONICS: | | | | |
| **Seal Integrity:** | Electronics IP6K8S | | | |
| ENVIRONMENTAL: | | | | |
| **Operating Temp Range:** | -40°C to +85°C | | | |
| **Humidity:** | 96% RH, 70°C, 96 hours | | | |
| **Vibration:** | Per MIL-810F minimum integrity | | | |
| **EMI:** | Withstand per SAE J1113 | | | |
| **RFI:** | Withstand per SAE J1113 | | | |
| MATERIALS: | | | | |
| **Button:** | Thermoplastic | | | |
| **Bezel:** | Thermoplastic | | | |
| **Snap Arms:** | Stainless steel | | | |
| **Wires:** | 18 AWG or 22 AWG | | | |


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**ALDERS electronic GmbH**
Arnoldstraße 19
47906 Kempen - Germany

+49 2152 8955-0
sales@alders.de

## HTW Thumbwheel
### Part Number Code

HTW - X X X X X X X X

| Travel | Output 1 | Output 2 | Operating Force | Button Style | Termination | Bezel Color | Button Color | Detent *(if required)** |
|---|---|---|---|---|---|---|---|---|
| **1.** +/- 40° | **A.** 2.5 +/- 2.0VDC | NONE | **1.** 5.0 oz. | **1.** Knurled Wheel | **A.** 18 AWG Wires 18.3" Long, Stripped Ends | **1.** Red | **1.** Red | **A.** Spring return center +/- 21°. 12 oz detent at end of travel, both directions** |
| **2.** +/- 30° | **B.** 2.5 +/- 2.0VDC | 2.5 +/- 2.0VDC | | **2.** Paddle Wheel | **B.** 22 AWG Wires 18.3" Long, Stripped Ends | **2.** Black | **2.** Black | |
| | **C.** 2.5 +/- 2.0VDC | 2.5 -/+ 2.0VDC | | | | **3.** Orange | **3.** Orange | |
| | **D.** 2.5 +/- 1.5VDC | NONE | | | | **4.** Yellow | **4.** Yellow | |
| | **E.** 2.5 +/- 1.5VDC | 2.5 +/- 1.5VDC | | | | **5.** Green | **5.** Green | |
| | **F.** 2.5 +/- 1.5VDC | 2.5 -/+ 1.5VDC | | | | **6.** Blue | **6.** Blue | |
| | **G.** 1.0 - 4.0VDC | 1.0 - 4.0VDC | | | | **7.** Violet | **7.** Violet | |
| | **H.** 0.5 - 4.5VDC | 0.5 - 4.5VDC | | | | **8.** Gray | **8.** Gray | |
| | **J.** 2.5 +/- 2.0VDC | NONE*** | | | | **9.** White | **9.** White | |
| | **K.** 2.5 +/- 2.0VDC | 2.5 +/- 2.0VDC*** | | | | | | |
| | **L.** 2.5 +/- 2.0VDC | 2.5 -/+ 2.0VDC*** | | | | | | |
| | **M.** 2.5 +/- 1.5VDC | NONE*** | | | | | | |
| | **N.** 2.5 +/- 1.5VDC | 2.5 +/- 1.5VDC*** | | | | | | |
| | **P.** 2.5 +/- 1.5VDC | 2.5 -/+ 1.5VDC*** | | | | | | |

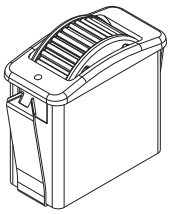
* Detented switch full travel is ±30° max. Detented switches reach full output before engaging detents.

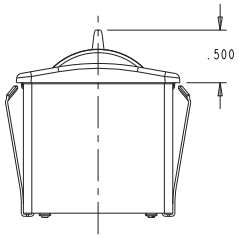
** Only available with Travel option 2.

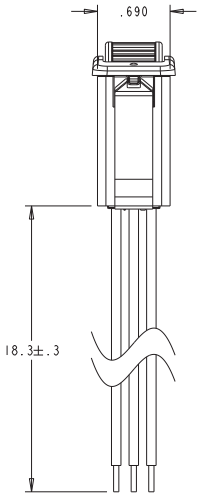
*** Options J, K, L, M, N and P are identical to options A, B, C, D, E and F respectively, except with a tighter center tolerance.

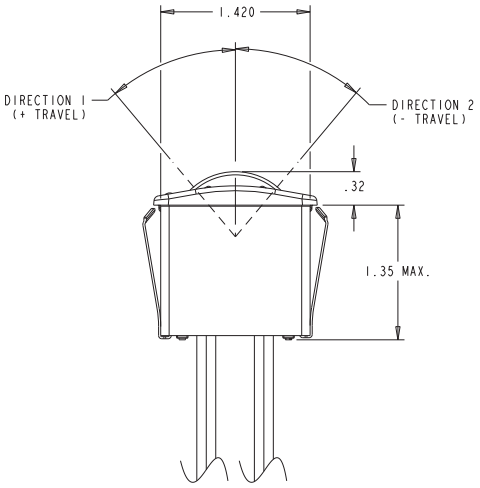
# HTW **Drawings**

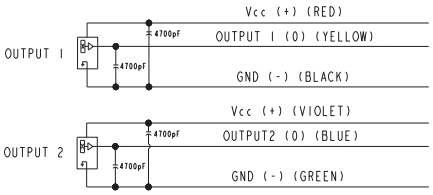
**PADDLE WHEEL BUTTON STYLE**





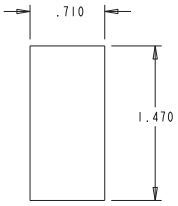



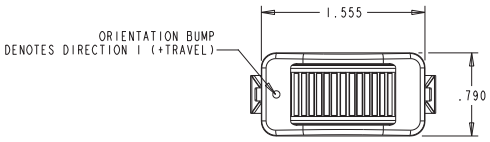

OUTPUT 2 IS NOT PRESENT IN ALL CONFIGURATIONS

MOUNTING:

RECOMMENDED PANEL THICKNESS: 0.100 OPTIMUM THICKNESS
(0.050 MIN. - 0.120 MAX.)

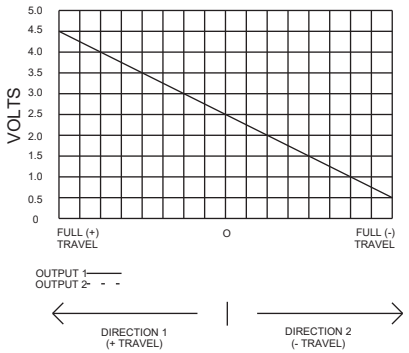
RECOMMENDED PANEL OPENING: 0.710 X 1.072 OPTIMUM
(0.710/0.720 -1.460/1.480)



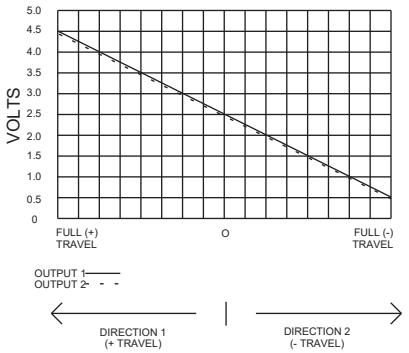



# HTW **Outputs**

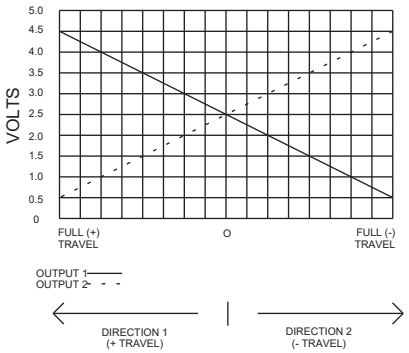
## OPTION A & J



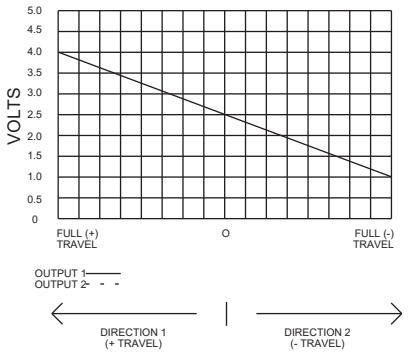

## OPTION B & K



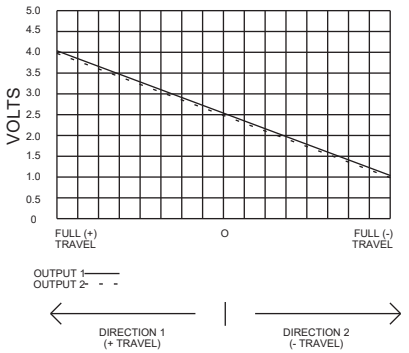

## OPTION C & L



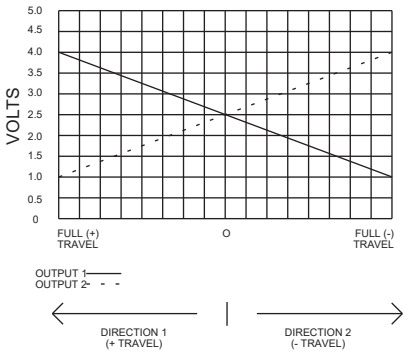

## OPTION D & M



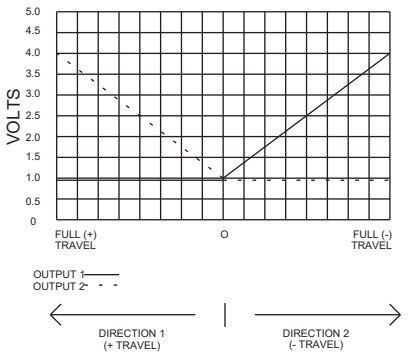

## OPTION E & N




## OPTION F & P




## OPTION G




## OPTION H

