

# TS1 Series Specifications

MECHANICAL (X & Y AXES)	
ANGLE OF MOVEMENT	45° (22.5° EACH DIRECTION)
EXPECTED CYCLE LIFE	2.5 MILLION
CENTERING	SPRING RETURN
MAX. VERTICAL LOAD	67.5 lbF
MAX. HORIZONTAL LOAD	50 lbF *

\* Measured 0.62" Above Panel Surface

ELECTRICAL	
SENSOR TYPE	HALL EFFECT
RESOLUTION	12 BIT
SUPPLY VOLTAGE	5VDC ± 0.01VDC
OUTPUT VOLTAGE	SEE OPTIONS
CENTER VOLTAGE	± 50mV
OVERVOLTAGE MAX.	20VDC
REVERSE POLARITY MAX.	-10VDC

PUSHBUTTON SWITCH	
ELECTRICAL LIFE	300,000 CYCLES
RATING	50mA, 12VDC
ACTUATION FORCE	1.15lbF

ENVIRONMENTAL	
OPERATING TEMPERATURE	-40°F TO 185°F
STORAGE TEMPERATURE	-40°F TO 185°F
IP SEALING ABOVE FLANGE	IP67
EMC IMMUNITY LEVEL	EN61000-4-3 *Compliance to 30A/m
EMC EMISSIONS LEVEL	EN61000-6-3
ESD IMMUNITY LEVEL	EN61000-4-2 *Compliance to ±15kV/±8kV
VIBRATION TESTING	Per SAE J1455 Section 4.9 & MIL-STD810G 514.6
MECHANICAL SHOCK	Per SAE J1455 Section 4.10 & MIL-STD-202G

MOLEX 530480510 CONNECTOR (ANALOG)		
PIN #	WIRE COLOR	DESCRIPTION
1	RED	POWER (+5V)
2	BLACK	GROUND
3	BLUE	X AXIS SENSOR
4	YELLOW	Y AXIS SENSOR
5	ORANGE	PUSHBUTTON**

\*\*Optional



MATERIALS	
PLASTIC HOUSING	MINERAL & GLASS FILLED NYLON
METAL HOUSING	GOLD ANODIZED ALUMINUM
BOOT & ACTUATORS	SILICONE

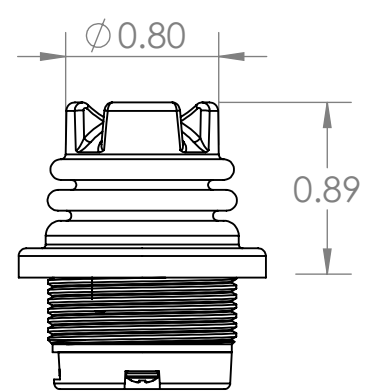
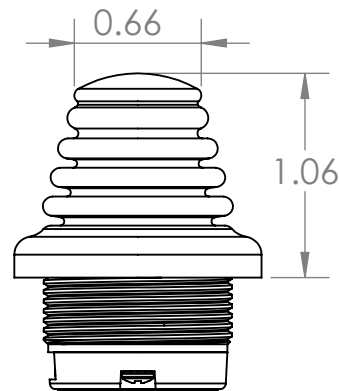
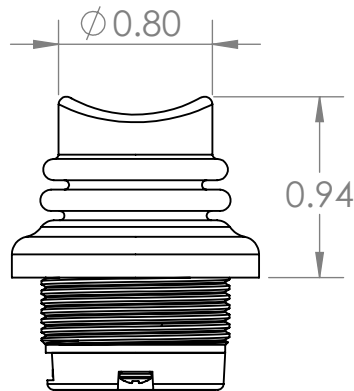
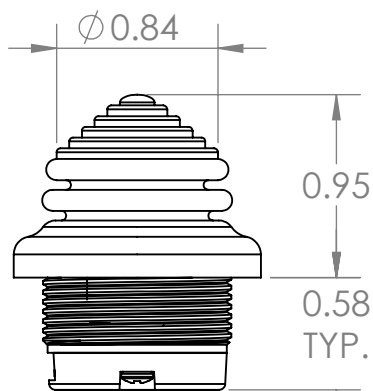
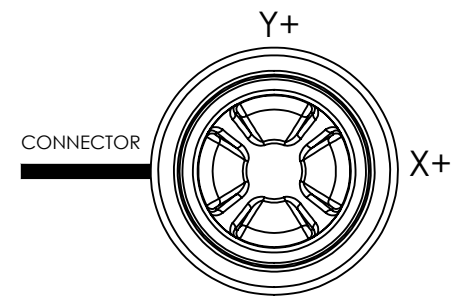
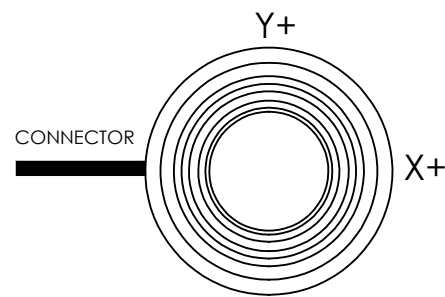
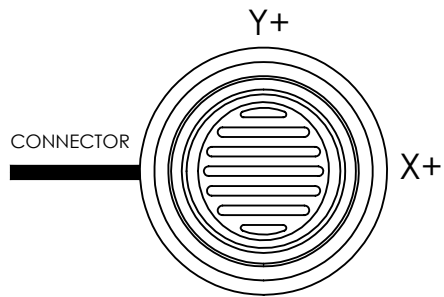
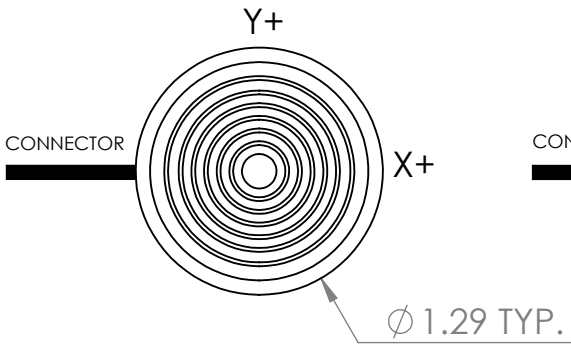
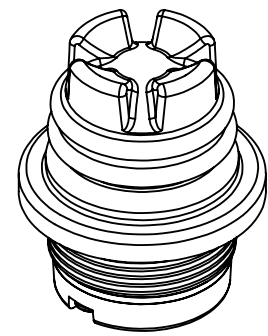
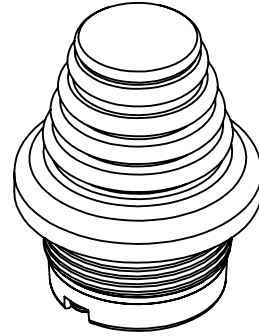
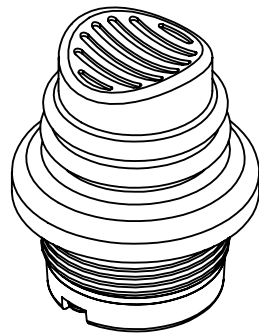
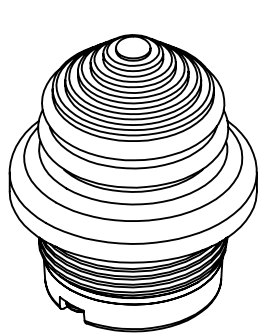
IP RATING: IP67 (ABOVE PANEL, ALL CONFIGURATIONS)

\*Extended Testing Levels

TS1 ELECTRICAL SPECIFICATIONS (USB VERSION)	
RESOLUTION	10 BIT
SUPPLY VOLTAGE	5VDC via USB CABLE
SYSTEM SUPPORT	WINDOWS (ALL), OSX, LINUX
SUPPORTED PROTOCOLS	USB HID 1.1 GAME CONTROLLER STANDARD DIRECTX HID DRIVERS JOYSTICK: 2 HID AXES PUSHBUTTONS: UP TO 1 HID BUTTON
CABLE	USB MALE TYPE A to RIGHT ANGLE MINI B 5FT (60") LENGTH (MINI B TO JOYSTICK)

CURSOR CONTROL OUTPUT OPTION:	
The <i>Cursor Control</i> output option converts the analog joystick output into a USB cursor control device. This is achieved by the joystick's microprocessor converting the absolute position of the joystick into a cursor velocity or mouse position.	
CABLE	USB MALE TYPE A to RIGHT ANGLE MINI B 5FT (60") LENGTH (MINI B TO JOYSTICK)





OPTION 1: STEPPED CAP

OPTION 2: SCOOP CAP

OPTION 3: PUSHBUTTON CAP

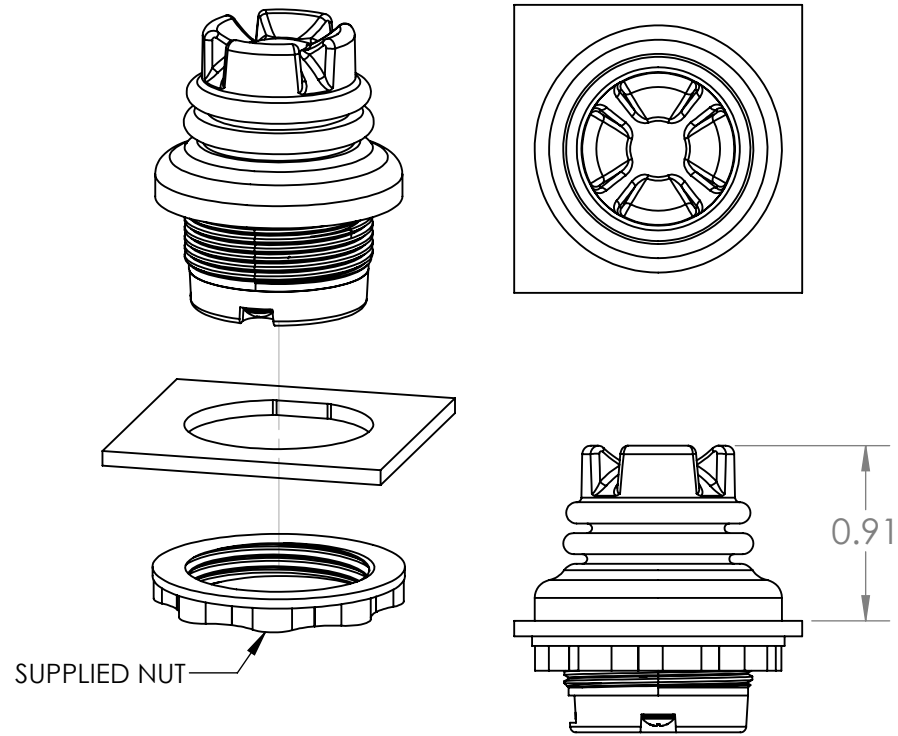
OPTION 4: CASTLE CAP

**\*NOTE: ACTUATOR OPTIONS SHOWN WITH THREADED HOUSING MOUNT. ADDITIONAL DROP-IN AND REAR MOUNT OPTIONS AVAILABLE**

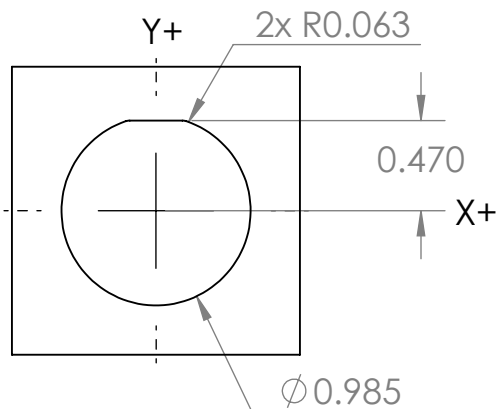
# TS1 SERIES - PANEL MOUNTING



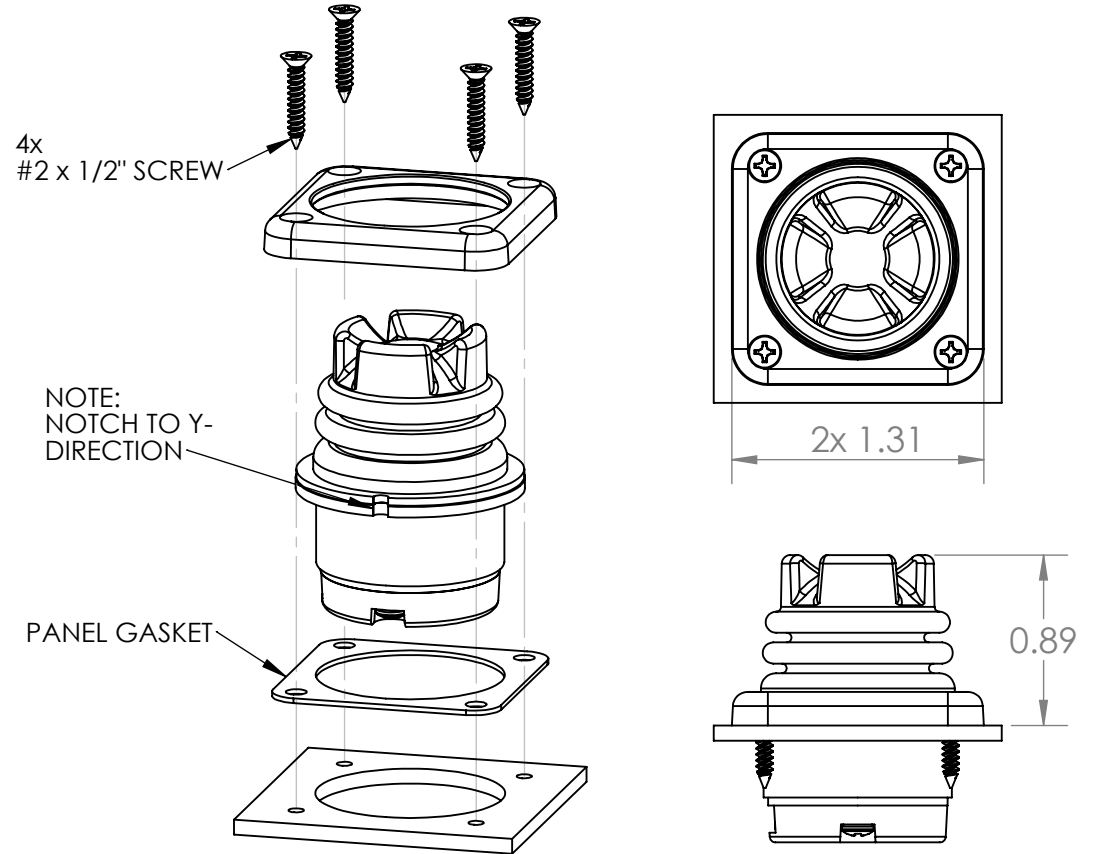
## THREADED HOUSING



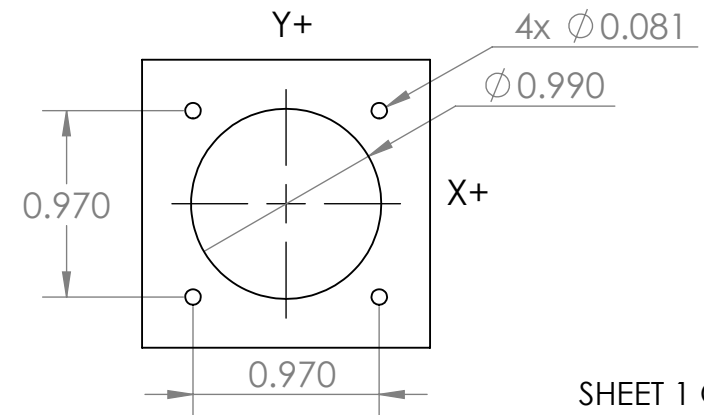
PANEL CUTOUT DIMENSIONS, THREADED HOUSING



## DROP-IN MOUNT



PANEL CUTOUT DIMENSIONS, DROP-IN HOUSING

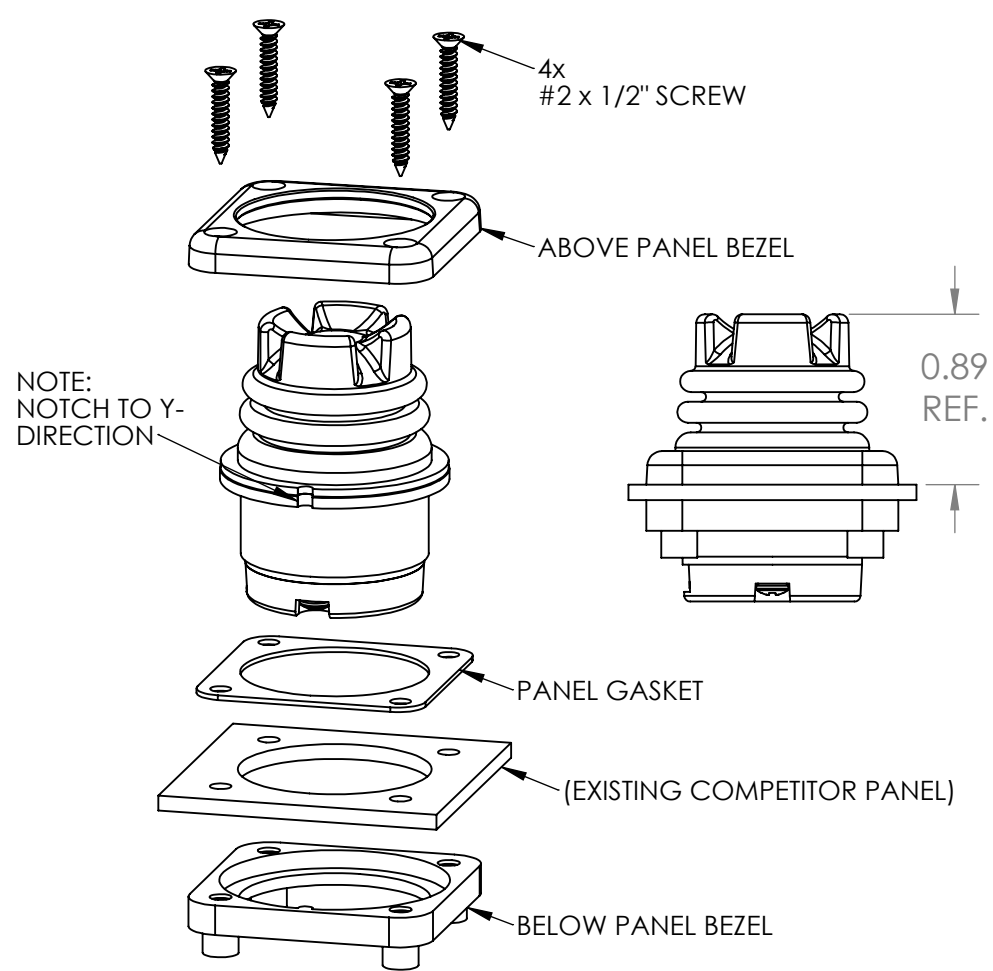
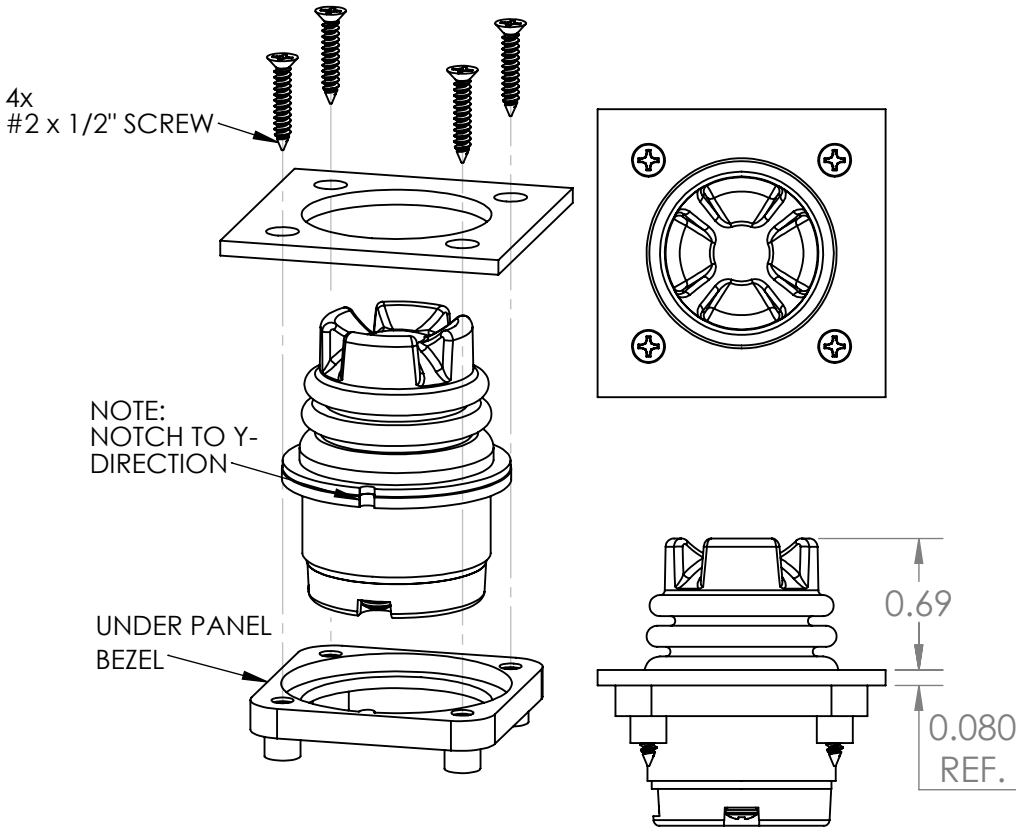


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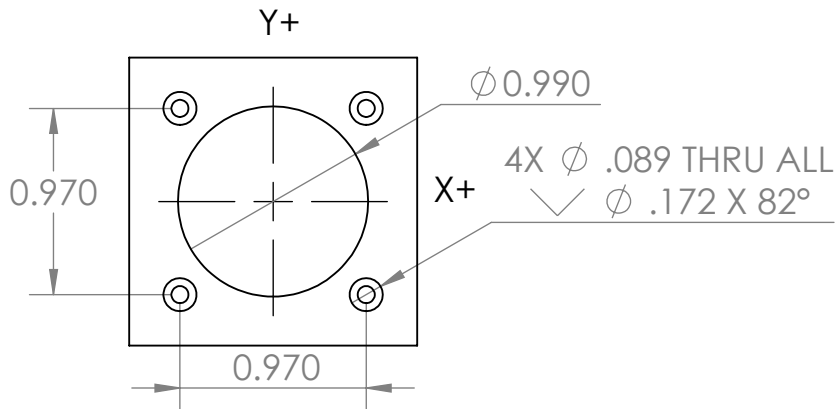
## REPLACING RUFFY TS1 SERIES DROP-IN MOUNT IN EXISTING COMPETITOR PANEL CUTOUT



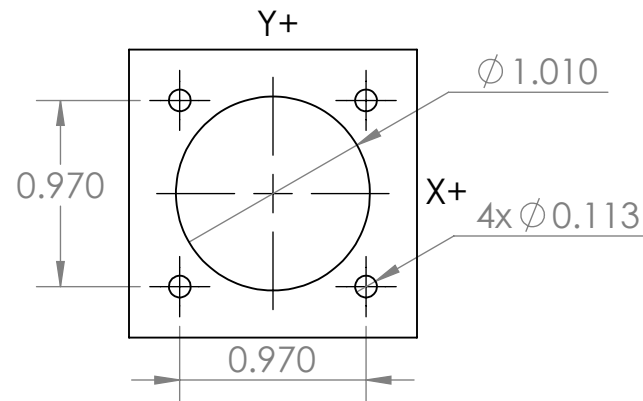
### REAR MOUNT

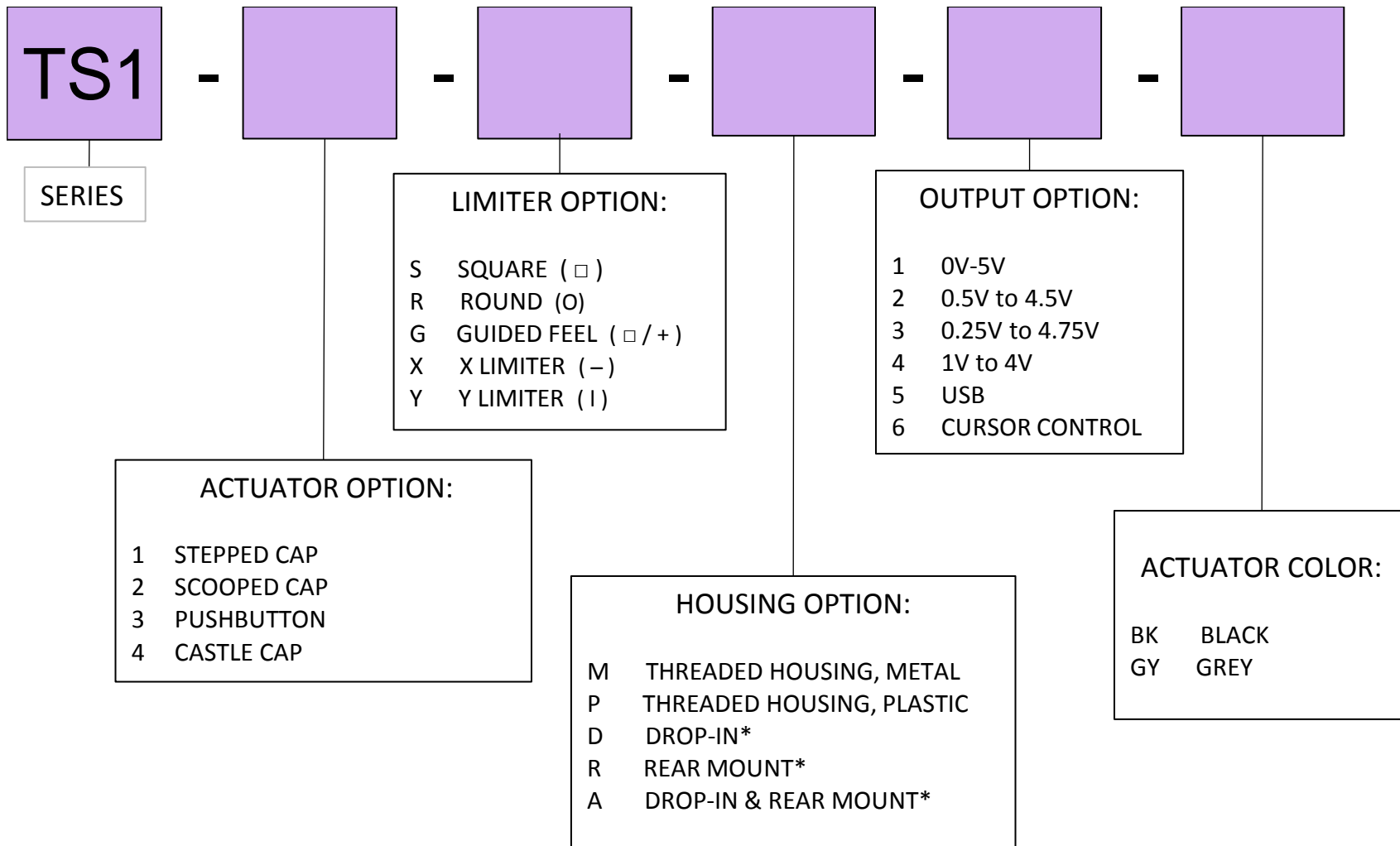


### PANEL CUTOUT DIMENSIONS, REAR MOUNT HOUSING



### COMPETITOR PANEL DIMENSIONS





\* Available with Castle Cap or Stepped Cap actuators only