



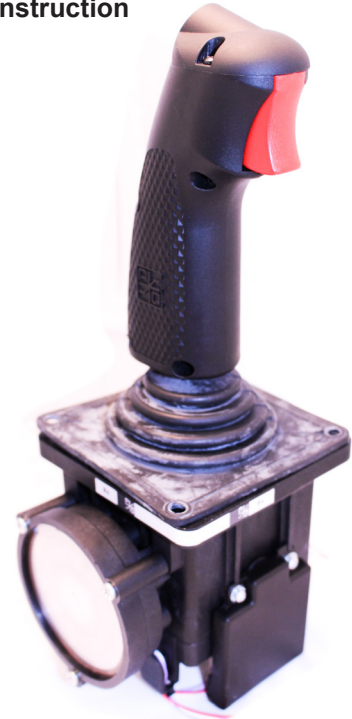
MODEL 225

Multi-Axis Joystick

- Contactless Hall Effect Technology
- Robust, Over-engineered weather-resistant construction
- Utilizes High cycle life torsion springs
- Friction Brake option available
- EMI & RFI resistant

The Model 225 provides a heavy duty multi axis, weather resistant mechanism, to convert operator's manual commands into an electronic output over an extended life of operation.

What makes the Model 225 unique is that it was specifically over-engineered to provide far more strength and durability than any outdoor application could warrant. It also utilizes four high cycle-life torsion springs (two per axis), which provides a smooth on/off axis "feel", while still maintaining longevity. As an added option, the Model 225 also is available with an advanced friction clutch brake to provide frictional control in the Y axis. A choice of several other hand grip styles are also available.



SHOWN WITH
Pistol Grip

Electrical Data	
Sensor	Hall Effect
Supply Voltage	5 - 60 VDC (determined by electrical option)
Hydraulic Valve/Solenoid Control*	See Optional Valve Drive Boards
Proportional Output	Max (+) Travel: 4.0 VDC
	Min (-) Travel: 1.0 VDC
	Centered: 2.5 VDC
	Output Impedance: 220 OHMS
Auxiliary ("switched") Outputs*	2.5 amps (two per axis) activities @
	Out-of-Neutral (20% Deadband)
Mechanical Data	
Travel	On-axis $\pm 20^\circ$
	Between Axes $\pm 27^\circ$
Mechanical life	10,000,000 Cycles (linear actuation)
Gating*	"+", single axis, limited travel, custom, etc...
Friction Module*	60 in-lbs. actuation force, with Center Detent
Operating Temperature	-40 - 85 degrees (C)
Environment Resistance	Humidity, Rain/Water, Sun/UV Exposure
	Engine oil, Coolant, Phosphate Cleaner



MODEL 225

MULTI AXIS JOYSTICK

MODEL 112/212 and 125/225 PART NUMBERING (Half effect only)
For special configurations, please call for assistance

212	S	15	S	56	56	F
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MODEL

- 212** Multi-Axis
- 212+** Gated "+" (no diagonals)
- 112** Single Axis
- 125** Single Axis
- 225** Multi Axis Joystick

BEZEL TYPE

- S** Small (for below-panel mounting)
 - L** Large (for above-panel mounting)
- See installation drawings (datasheet) cut-out dimensions. Model 225 must use Small Bezel.

GRIP STYLE

- 05** = 2-AXIS, NO HANDGRIP
- 10** = 2-AXIS, PALM GRIP with SLIDELOCK
- 15** = 2-AXIS, PALM GRIP
- PALM GRIP (Styles 10 & 15) Available in: BLACK (Standard)
- ORANGE (Add -OR at the end of the Part Number)
- YELLOW (Add -YL at the end of the Part Number)
- 28** = 2-AXIS, RSG GRIP (ROCKER: LEFT, RIGHT)
- 29** = 2-AXIS, RSG GRIP (ROCKER: PUSH-BUTTON)
- 30** = 2-AXIS, RSTG ROCKER GRIP
- 31** = 2-AXIS, RSTG ROCKER GRIP WITH SIDE PUSH-BUTTON
- 32** = 2-AXIS, RSTG NO ROCKER, TRIGGER ONLY
- 33** = 2-AXIS, RSTG NO ROCKER, TRIGGER & SIDE PUSH-BUTTON
- 35** = 2-AXIS, RSTG NO ROCKER, TRIGGER & TOP PUSH-BUTTON
- 38** = 2-AXIS, TRS GRIP
- 39** = 2-AXIS, RSTG, NO RCKR, TRIGGER, TOP&SIDE BTTN TOGGLE
- 41** = 2-AXIS, RSTG, ROCKER, TRIGGER & MAINTAINED LEFT SIDE PB
- 43** = 2-AXIS, MSG, 3 TOGGLE SWITCHES
- 44** = 2-AXIS, MSG, 4 TOGGLE SWITCHES
- 46** = 2-AXIS, MSG, 6 PUSH-BUTTONS
- 48** = 2-AXIS, MSG, 3 PUSH-BUTTONS
- 49** = 2-AXIS, MSG, 4 PUSH-BUTTONS
- 50** = 2-AXIS, TRS, NO ROCKER SWITCHES (PLASTIC CAP)
- 51** = 3-AXIS, MSG, 6 TOGGLE SWITCHES
- 52** = 2-AXIS, MSG, 4 TOGGLE & 2 PUSH BUTTON SWITCHES
- 53** = 2-AXIS, PISTOL, TRIGGER, PUSH-BUTTON ON TOP
- 54** = 3-AXIS, PISTOL, TWIST, TRIGGER WITH PUSH BUTTON ON TOP
- 55** = 5&1/2-AXIS, MFHG, TWIST, MINI-JOYSTICK, PRPRTNL TRGR.
- 56** = 5&1/2-AXIS, MFHG, PUSH-PULL, MINI-JYSTCK, PRPRTNL TRGR
- 57** = 3-AXIS, PISTOL, TRIGGER, SWTCH ROCKER & PRPRTNL TWIST
- 58** = 2-AXIS, MFHG, HALL TRIGGER
- 59** = 3-AXIS, PISTOL, TRIGGER, PROPORTIONAL TWIST
- 60** = 4-AXIS, PISTOL, TRIGGER, PRPRTNL ROCKER & TWIST
- 61** = 3-AXIS, PISTOL, TRIGGER, PROPORTIONAL ROCKER
- 62** = 2-AXIS, PISTOL, TRIGGER & SWITCHED ROCKER
- 63** = 2-AXIS, PISTOL, TRIGGER, NO PUSH-BUTTON ON CAP
- 64** = 3-AXIS, ERGO, TRIGGER & PROPORTIONAL ROCKER
- 65** = 2-AXIS, PISTOL, TRIGGER & SWTCH RCKR, 2 PSH-BTTNS (L)
- 66** = 3-AXIS, PISTOL, TRIGGER & PRPRTNL RCKR, 2 PSH-BTTNS (L/R)
- 67** = 2-AXIS, PISTOL, TRIGGER & SWTCH SEP COMMONS, RCKR, 2 PSH-BTTNS (L)
- 68** = 2-AXIS, MULTI-SWITCH GRIP WITH 2 TOGGLE AND 4 PUSH-BUTTONS

FRICITION MODULE

- F** Friction (Y-Axis only)
- Available on Model 125/225 only.

ELECTRICAL OPTION (Y-Axis)

ELECTRICAL OPTION (X-Axis)

SPRING

- L** Light
- S** Standard (for most applications)
- H** Heavy

Ordering non-standard spring may increase lead time

GRIP STYLE CONTINUED

- 69** = 3-AXIS, PLASTIC PISTOL GRIP TRIGGER & PROPORTIONAL ROCKER W/TWO SIDE PUSH-BUTTONS, BOTH PUSH-BUTTONS ON LEFT SIDE OF GRIP
- 70** = 4-AXIS, PLASTIC PISTOL GRIP, TRIGGER, PROPORTIONAL ROCKER & PROPORTIONAL TWIST W/TWO SIDE PUSH-BUTTONS, BOTH PUSH-BUTTONS ON LEFT SIDE OF GRIP
- 71** = 2-AXIS, RSG WITH YELLOW P9 PUSH BUTTON SWITCH
- 72** = 2-AXIS, RSG NO ROCKER
- 73** = 2-AXIS, MULTI-SWITCH GRIP WITH 5 PUSH-BUTTONS AND 1 TOGGLE
- 74** = 2-AXIS, LEFT HANDED ERGO GRIP WITH SWITCHED ROCKER
- 75** = 2-AXIS, ERGO GRIP WITH SWITCHED ROCKER
- 76** = 2-AXIS, ERGO GRIP TRIGGER & SWITCHED ROCKER W/TWO SIDE PUSH-BUTTONS, BOTH PUSH-BUTTONS ON LEFT SIDE OF GRIP
- 77** = 2-AXIS, TRS GRIP with P9 OTTO PUSH BUTTON SWITCH
- 78** = 3-AXIS, PLASTIC PISTOL GRIP, TRIGGER, SWITCHED ROCKER & PROPORTIONAL TWIST W/TWO SIDE PUSH-BUTTONS, BOTH PUSH-BUTTONS ON LEFT SIDE OF GRIP
- 79** = 3-AXIS, LEFT HANDED ERGO GRIP, PROPORTIONAL ROCKER
- 81** = 3-AXIS, PLASTIC PISTOL GRIP, TRIGGER, PROPORTIONAL PUSH PULL
- 82** = 3-AXIS, PLASTIC PISTOL GRIP, TRIGGER, PROPORTIONAL PUSH PULL WITH PUSH-BUTTON ON TOP COVER
- 83** = 3-AXIS, PLASTIC PISTOL GRIP, TRIGGER, PROPORTIONAL PUSH PULL WITH SWITCHED ROCKER
- 84** = 4-AXIS, PLASTIC PISTOL GRIP, TRIGGER, PROPORTIONAL PUSH PULL WITH PROPORTIONAL ROCKER
- 85** = 3-AXIS, ERGO GRIP, TRIGGER & PROPORTIONAL ROCKER W/TWO SIDE PUSH-BUTTONS, BOTH PUSH-BUTTONS ON LEFT SIDE OF GRIP
- 86** = 2-AXIS, PLASTIC PISTOL GRIP TRIGGER & SWITCHED ROCKER W/TWO SIDE PUSH-BUTTONS, ONE ON LEFT AND ONE ON RIGHT
- 87** = 3-AXIS, TWIST KNOB GRIP, PROPORTIONAL TWIST
- 88** = 2-AXIS, MULTI-SWITCH GRIP WITH 3 TOGGLE & 2 PUSH BUTTON SWITCHES
- 89** = 4-AXIS, PLASTIC PISTOL GRIP, TRIGGER, PROP. ROCKER & PROP. TWIST, W/ 2 SIDE PUSH-BUTTONS ONE ON LEFT AND ONE ON RIGHT
- 90** = 2-AXIS, MULTI-SWITCH GRIP WITH 1 PUSH BUTTON



MODEL 225

MULTI AXIS JOYSTICK

GRIP STYLES CONTINUED

- 91 = 3-AXIS, LEFT HANDED ERGO GRIP, PROPORTIONAL ROCKER w/2 Side Push-Buttons one on left and one on right
- 92 = 2-AXIS, MULTI-SWITCH GRIP WITH 6 TOGGLE SWITCHES
- 93 = 2-AXIS, RSTG NO ROCKER TRIGGER & MAINTAINED SIDE PUSH-BUTTON
- 94 = 2-AXIS, LEFT HANDED ERGO GRIP, SWITCHED ROCKER, w/2 Side Push-Buttons one on left and one on right
- 95 = 2-AXIS, MULTI-SWITCH GRIP WITH 3 TOGGLE & 3 PUSH BUTTON SWITCHES
- 98 = 2-AXIS, MULTI-SWITCH GRIP WITH 1 TOGGLE & 2 PUSH BUTTON SWITCHES
- 99 = N/A (already used)
- 100 = 2-AXIS, MULTI-SWITCH GRIP WITH 2 TOGGLE & 1 PUSH BUTTON SWITCHES
- 101 = 2-AXIS, MSG 2.0 WITH 5 PUSH BUTTON SWITCHES & Capacitive SENSOR (No Trigger)
- 102 = 3-AXIS, PLASTIC PISTOL GRIP, TRIGGER, PROP. TWIST, SWITCHED ROCKER, W/ 2 SIDE PB's 1 LEFT & 1 RIGHT (C-14934)
- 103 = 2-AXIS, METAL PISTOL GRIP TRIGGER & SWITCHED ROCKER W/TWO SIDE PUSH-BUTTONS, BOTH PUSH-BUTTONS ON LEFT SIDE OF GRIP
- 106 = 5-AXIS, MSG 2.0 WITH 3 PROPORTIONAL ROLLER ROCKERS & Capacitive SENSOR (No Trigger)
- 107 = 3-AXIS, MSG 2.0 WITH 1 PROPORTIONAL ROLLER ROCKER ON LEFT SIDE, 2 PUSH BUTTONS & TRIGGER
- 108 = 2-AXIS, RSTG NO ROCKER, TRIGGER with MAINTAINED TOP & LEFT SIDE PUSH-BUTTONS
- 109 = 2-AXIS, MULTI-SWITCH GRIP WITH 4 MAINTAINED PUSH-BUTTONS
- 110 = 4-AXIS, MSG 2.0 WITH 1 DUAL AXIS MINI-JOYSTICK ON LEFT SIDE, 2 PUSH BUTTONS & TRIGGER
- 111 = 3-AXIS, MSG 2.0 WITH 1 PROPORTIONAL ROLLER ROCKER IN CENTER, 2 PUSH BUTTONS (1 LEFT & 1 RIGHT) & TRIGGER
- 112 = 2-AXIS, MSG 2.0 WITH 2 TOGGLES, 3 PUSH BUTTONS
- 113 = 2-AXIS, MSG 2.0 WITH 1 TOGGLE, 5 PUSH BUTTONS
- 114 = 2-AXIS, MSG 2.0 WITH 2 TOGGLE 5 PUSH BUTTONS
- 115 = 2-AXIS, MSG 2.0 WITH 6 PUSH BUTTON SWITCHES
- 116 = 2-AXIS, MSG 2.0 WITH 2 ROLLER ROCKERS
- 117 = 2-AXIS, MSG 2.0 WITH 4 TOGGLES, 2 PUSH BUTTONS
- 118 = 2-AXIS, MSG 2.0 WITH TRIGGER & 4 PUSH BUTTON SWITCHES
- 119 = 2-AXIS, MSG 2.0 WITH TRIGGER, 2 PUSH BUTTONS & 2 TOGGLES
- 120 = 3-AXIS, TWIST KNOB GRIP, PROPORTIONAL TWIST with PUSH BUTTON
- 121 = 2-AXIS, MSG 2.0 WITH TRIGGER, Prop. Mini-Joystick, 3 PUSH BUTTONS & 1 TOGGLES
- 123 = 2-AXIS, MSG 2.0 3 Maintained TOGGLES
- 124 = 3-AXIS, MSG 2.0 WITH 1 PROPORTIONAL ROLLER ROCKER IN CENTER, 4 PUSH BUTTONS (2 LEFT & 2 RIGHT) & TRIGGER
- 125 = 2-AXIS, RSTG NO ROCKER, TRIGGER with 5 SIDE PUSH-BUTTONS
- 126 = 2-AXIS, MSG 2.0 WITH 4 Switched Rockers(Toggles)
- 127 = 2-AXIS, MSG 2.0 WITH 5 Switched Rockers(Toggles)
- 128 = 2-AXIS, RSTG NO ROCKER TRIGGER & TOP MAINTAINED PUSH-BUTTON
- 129 = 2-AXIS, MSG 2.0 WITH 1 TOGGLE, 3 PUSH BUTTONS, AND TRIGGER
- 131 = 3-AXIS, Palm grip 2.0 PROPORTIONAL TWIST, Push Button on Left
- 134 = 3-AXIS, Palm grip 2.0 PROPORTIONAL TWIST, 2 Push Buttons on Left

ELECTRICAL OPTIONS

- 56 = 10-30VDC, 2.5V NTRL ± 1.5V, 1.5 AMP DIR. AUX OUT
- 57 = 10-30VDC, 2.5V NTRL ± 1.25V, 1.5 AMP DIR. AUX OUT
- 58 = 5VDC, ± 30%, NO DIRECTIONAL AUX OUT
- 59 = 5VDC, ± 40%, NO DIRECTIONAL AUX OUT
- 60 = 18-60VDC, SEVCON, 1.5 AMP DIR. AUX OUT
- 61 = 10-30VDC, 2.5V NTRL ± 2.0V, 1.5 AMP DIR AUX OUT
- 62 = 10-30VDC, DANFOSS
- 63 = 10-30VDC, 0.0V NTRL + 10.0V, 1.5 AMP DIR AUX OUT
- 64 = 10-30VDC, 2.5V NTRL ± 1.5V, 1.5 AMP 50% DIR. AUX OUT
- 65 = 18-60VDC, PWR PAK SVCN, 0.2 AMP SINK DIR. AUX OUT
- 67 = 10-30VDC, 0.0V NTRL + 5.0V, 1.5 AMP DIR AUX OUT
- 68 = 10-30VDC, 2.5V NTRL ± 2.0V, 1.5 AMP 50% DIR. AUX OUT
- 69 = 5VDC, ± 10%, NO DIRECTIONAL AUX OUT
- 70 = 5VDC, ± 25%, NO DIRECTIONAL AUX OUT
- 71 = 10-30VDC, 4-20mADC (4mADC NTRL, 20mADC ends) 1.5 AMP DIR. AUX OUT
- 72 = 10-30VDC, 4-20mADC (12mADC NEUT, 4 and 20mADC ends) 1.5 AMP DIR. AUX OUT
- 73 = SPLIT SUPPLY INPUT (0vdc NEUT, POS. VS & NEG. VS @ ENDS) 15mAMP DIR. AUX OUT
- 74 = 10-30VDC, 5.0V NEUTRAL ± 5.0V SWING, 1.5 AMP DIR AUX OUT
- 75 = 18-60VDC, 0.0V NEUTRAL ± 5.0V SWING, 1.5 AMP DIR AUX OUT
- 76 = 5VDC, 40% SIGNAL SWIING, 1.5 AMP DIR AUX OUT
- 77 = 5VDC, 25% SIGNAL SWING, NO DIRECTIONAL AUX OUT
- 78 = 10-30VDC, 0-20mADC (0 mADC NEUT, 20mADC ends) 1.5 AMP DIR. AUX OUT
- 79 = 10-30VDC, PWM out sig 50%duty cycle NEUTRAL 10% and 90% ends, no DIR. AUX OUT
- 80 = 10-30VDC, 4-20mADC (4mADC±1mA NEUT, 20mADC±1mA ends) 1.5 AMP DIR. AUX OUT
- 82 = 10-30VDC, 5V NEUTRAL ± 4.5V SWING
- 83 = 5VDC, USB board
- 84 = 10-30VDC, CANbus (J1939) board
- 85 = SPLIT SUPPLY INPUT (0vdc NEUT, POS. VS & NEG. VS @ ENDS) 15mAMP 5% DIR. AUX OUT
- 86 = 5VDC ± 40% WITH INVERTED OUT, 1.5 AMP SINKING DIR AUX OUT
- 87 = 10-30VDC, 2.5V NEUTRAL ± 2.5V SWING, 1.5 AMP DIR AUX OUT
- 88 = 5VDC, DUAL DIE SENSOR, INVERTED OUTPUT, 40% SWING, NO AUX
- 89 = 10-30VDC, DUAL DIE SENSOR, INVERTED OUTPUT, 40% SWING, NO AUX
- 90 = 12-30VDC, 0.0 V NEUTRAL +10V/-10V ENDS, 1.5AMP DIR. AUX OUTPUT
- 91 = 10-30VDC, 0.0V NEUTRAL ± 10.0V SWING, 1.5 AMP DIR. AUX AT +/-0.5V
- 92 = 12-30VDC, 0.0 V NEUTRAL +5V/-5V ENDS, 1.5AMP DIR. AUX OUTPUT
- 93 = 12-30VDC, 0.0 V NEUTRAL +10V/-10V ENDS, 1.5AMP DIR. AUX OUTPUT AT +/-0.5V
- 94 = 10-30VDC, 40% SWING, SINKING DIR. AUX OUTPUTS

If you do not see your option listed, please call for assistance. Valve Drive Board may be required to control most hydraulic valves (sold separately)

For more details of electrical options, please see pages 4-5.

Note:

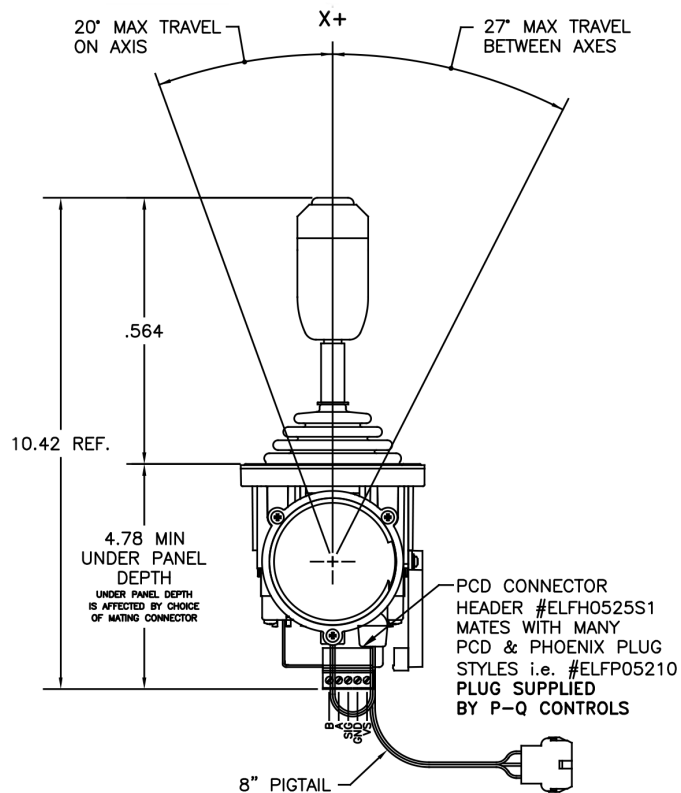
1. If you would like a costum made grip, please call for specifications.
2. Not all grips are listed, please call for further assistance.
3. Grips and Electrical Options get added all the time, please call for assistance.



MODEL 225

Multi-Axis Joystick

Technical Drawing Example



Technical Data Switches (P3-7 example)

Electrical Load	10A Resistive and 5A Inductive
DWV	1050 vrms
Low Level	10mA @ 30mV max DC or peak AC
Electrical Life	25,000 or 100,000 cycles
Mechanical Life	1 million cycles
Sealing	IP67
Action	Momentary, Snap-action
Operating Force	2.5 lbs or 4.0 lbs
Total Travel	0.085 +/- 0.015 inches

Available Button Colors:



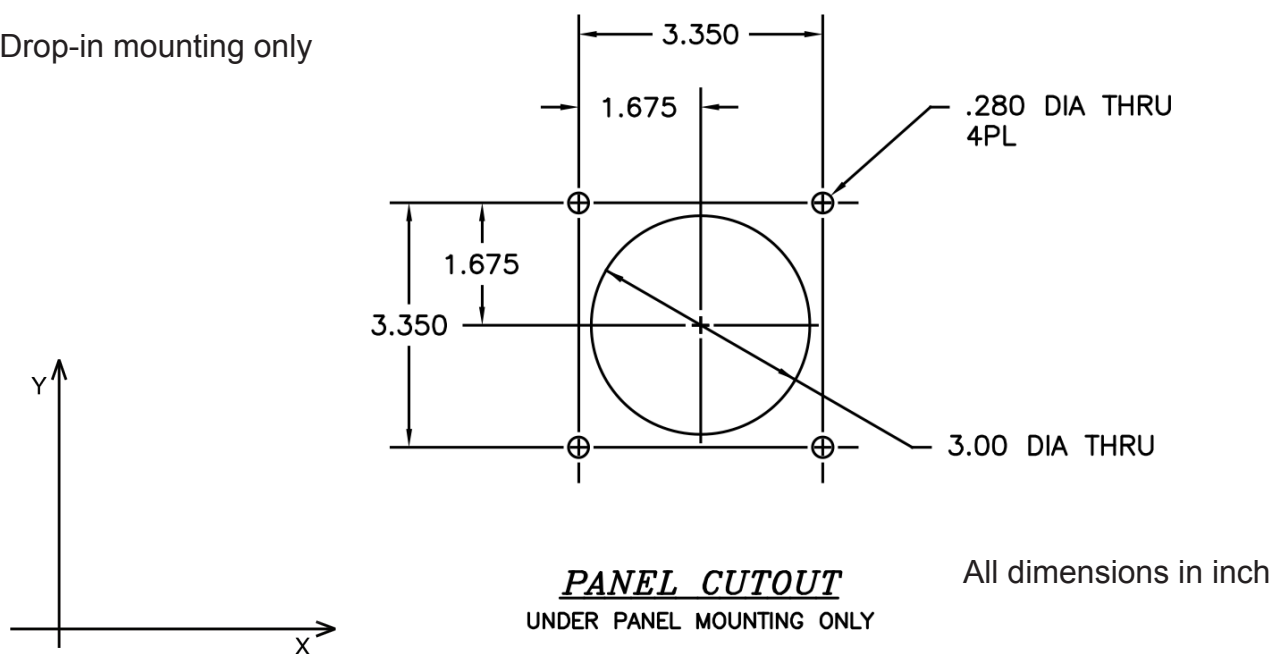


MODEL 225

Multi-Axis Joystick

Mounting Cutout Dimensions

Drop-in mounting only



Note:

1. Control handle has friction drag with a positive center detent.
2. More Wiring for more control options.
3. This model comes with a PCD connector & Pheonix plug.
4. control handle is sprung to center position.