

F1000-N24W

OEM ANALOG JOYSTICK



F1000-N24W STANDARD FEATURES

- · High Precision proportional analog output voltage
- Low-Profile Joystick Knob
- Single Axis or Two Axes Analog Joystick
- External Analog PCB Improves reliability and eliminates drifting or "in-service" recalibration issues.
- · Deadband at Center (+/- 1° to 2°)
- Movement Spring Return (Friction Held Special Order)
- Operating Temperature 0°C to 80°C (0°F to 176°F)
- White FDA Silicone Boot NEMA 4 (IP66) sealing -Operation in harsh environmental conditions
- Parylene Coated boot and handle toughest molecular barrier protection
- Conductive Underlayment EMI/RFI Protection
- Non-contacting inductive sensor technology allows high reliability (99.999%) and durability (10,000,000+ random deflections)
- Brass Threaded Inserts (#4-40 or 3mm) gurantees sealing rating without concern of breakage due to over torquing

F1000-N24W MEDICAL TECHNICAL DRAWING

F-SERIES MEDICAL HANDLES / KNOBS

NON-PUSHBUTTON N2W | N24W PUSHBUTTON N3W | N33W

F-SERIES MEDICAL ANALOG JOYSTICK

CTI's OEM F-Series medical joysticks use a non-contacting inductive sensor technology, providing superior reliability over potentiometer, hall-effect, or contacting based technologies. Potentiometer and contacting sensors inherently breakdown over time with usage, while hall-effect sensors change over time creating drifting issues. The inductive sensor design is free of those debilitating physical limitations, as well as immunity to changes in temperature or humidity. The inductive sensor only susceptibility is to extraneous high EMI/RFI signals which are mitigated by the use of a conductive boot and ferrite bead to provide an effective shield.

The NEMA 4 (IP66) sealing F-Series analog medical joysticks are most suitable for critical applications requiring high durability (10M+ cycles), high availability (99.999% uptime), and/or high reliability (extreme operating temperatures, exposure to harsh climate conditions or solid and liquid contaminants). Its compact size minimizes below depth panel area by usage of an external analog PCB which provides a high precision proportional analog output voltage.

The modular sub-assembly design means that a tailored joystick can be rapidly and cost effectively manufactured in low volume. Manufacturing options offer protection against operation in extreme temperature ranges, rapid changes in temperature causing condensation or high humidity, protection against high vibration, EMI/RFI signals, and a separate autonomous signal is available as an open or short circuit safety indicator. The combination of these options allows for a varied high product ratio mix which meets industry standards specifications including aerospace, military, marine, medical, and transportation.

F-SERIES MEDICAL MANUFACTURING OPTIONS						
D	Operating Temperature Range -40°C to +80°C (Standard 0°C to +80°C)					
Z	Conformal Coating of PCB (protects electronic components against condensation)					
F	Ferrite Bead (EMI/RFI Protection - ONLY used if joystick is mounted in a metal enclosure)					
1	Optical Neutral "Safety" Switch (Electrical indicator of an Open or Short Circuit typically used in Motion Control Applications)					
G	Maximum Compression Spring (typically used in Mobile Applications)					
E	No Deadband at Center (greater control via software algorithm is required)					
	*For complete ordering information please refer to Technical Drawing 761844					

- 8.00 [203.20] - 1.75 [44.45] .50 [12.70] BRASS INSERT (X4) OPTIONAL NEUTRAL SWITCH WIRES (BROWN & RED) 20.° MAX. DEFLECTION BROWN ◆ ANALOG PCB ◆ WHITE PVC KNOB PARYLENE COATED ORANGE PIN 6 1.65 [41.91] SQ. 3 PIN 7 2.1 [53.34] VIOLET PIN 1 WHITE FDA SILICONE BOOT PARYLENE COATED Φ CTI27 .96 [24.38] OPTIONAL CLEARANCE FOR #4 (3 MM) X4 FERRITE BEAD 1.00 REF 1.28 RIBBON CABLE [32,51] .13 (3.30 MM) DIA. (X4)-.87 [22.10] 1.28 [32.51] SQ. Ф

F-SERIES JOYSTICK PATENTS

U.S.A. PATENTS 4,825,157 | 5,376,946 | 5,532,476

See CTI Technical Drawing 761844

MOUNTING DETAIL

1.38 [35.05]



F1000-N24W

OEM ANALOG JOYSTICK

_		CATION								
Powe	er Consumption		1	.0mA @ 5VDC (typical) 15mA @ 10VD	C (typical)				
R	epeatability			>	> 1%					
	Accuracy		> 19	% Full Scale (typical)	> 2% Full Scale	(worst case)				
Option	Regulated Input Voltage (D	Min Deflection C) Output Voltage	Output Center Voltage	Max Defelection Output Voltage	Impedence (ohms)	Optical Neutral "Safety" Switch		Vref		
2	+/-5 (Dual Supplie	es)* -5	-5 0		1k	0V at Center, 5V off Center		Vref =5.0V (Vs=10.0		
4	+5	0.5	0.5 2.5 4.5 1k 0\		0V at Center, 5V off Center		Vref =2.5V (Vs=5.0			
5 +5		0	2.5	5	1k	0V at Cent	er, 5V off Center	Vref =2.5V (Vs=5.0		
		*Optional sing		ative - contact factor	-					
	oand (Default)			ge remains constant v						
No Dead	lband (E Option)		Center Voltag	e will change within t	he 1° to 2° perim	eter around	center.			
	ical Neutral fety" Switch	Provides the Electronics Circuit. This optical	indicator is totally sep	th a "circuit safety or o parate, independent, a tick at center signal is	and complemen	tary to the V>				
	rtual Reference : Center/Baseline) .	Allows the Electronics Source (Vs) has preci Taken as an Input Voltage	ision/tolerance ratio >	>0.01% or expected to	vary slightly ove	er time. Used	d as an Output Vo	Itage, Vref is ½Vs.		
MECH	IANICAL SPECIF	ICATION								
N24W I	Knob Dimensions	Above Panel: 2.2	I" (54.36mm)	Below Panel	l: 0.87" (22.10mm	n)	Base: 1.65" S	SQ. (41.91mm SQ.)		
N24V	V Specifications	Knob Type Non	-Pushbutton Axes	Single or Dual Axe	es Sens	or Technolo	gy	Inductive		
Life	e Expectancy		X & Y Axes			10,000,00	00 random deflec	tions		
	MTBF			Greater than	n 100,000 hours					
Movement			X & Y Axes Movement							
Position/Placement		S	pring Return (Standa	.rd)	Friction Held (Special Orde					
Operational Force		X & Y Breakout Force	e 140g (Standard)	Two (G Options)	X & Y Full Sc	Ill Scale Force 235g (Standard)		Two (G Options		
Shock		Peak Value	30-50g	Peak Duration	11m	S	Waveform	Half Sine		
	Vibration	Frequency / Dis	placement	5-25 Hz /	0.1"		25-55 Hz /	0.03"		
ENVI	RONMENTAL SF	ECIFICATION								
			Standard				Optional			
Operating Temperature		0° to	0° to 80° C / 32° to 176° F (Standard) -40° to 80° C / -40° to 176° F (D Option)							
Storage Temperature				(Standard)	-40° to 80° C / -40° to 176° F					
				-40° to 80°	C / -40° to 176°					
R	elative Humidity	Range	e 35-65%, 100% non-	-40° to 80° condensing		100%	condensing (Z Op	otion)		
R	elative Humidity Sealing Rating		e 35-65%, 100% non-	-40° to 80° condensing X & Y Axe	es: NEMA 4 (IP66	100%		otion)		
R Hazardou	elative Humidity Sealing Rating us Substance Protect	ion	e 35-65%, 100% non-0 Par	-40° to 80° condensing X & Y Axerylene Coating (tough	es: NEMA 4 (IP66	100%	ion)	otion)		
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