



**EAT•N**

**Hydraulics**

**Ultronics™ Joystick**

Non-Contacting Programmable Controller



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## Product Overview

### Functionality

Provides capacity to work up to four proportional work functions simultaneously.

Allows complete flexibility to tune joystick outputs and responses, resulting in precise control of work functions and less wear and tear on your application.

### Robust Design

Utilizes non-contacting optical sensors; thereby totally eliminating traditional wear issues found in standard potentiometer joysticks. This results in increased service life and less down time.

Features a durable armadillo shroud with a built-in wiper seal and an internal engineered polymer gaiter that eliminates failures normally allocated with external gaiter due to ingress of contamination.

### Modular Design

Facilitates customization of joystick operator interface applications without affecting sealing integrity, providing the ability to create a customized solution quickly.

Available options include single rollers, dual rollers, button combinations, and trigger options.

### Configuration

Comprehensive software utility (Joycal™) that enables the customer to configure all of the joystick outputs and responses to interface with individual machine and operator requirements.

### Ergonomic

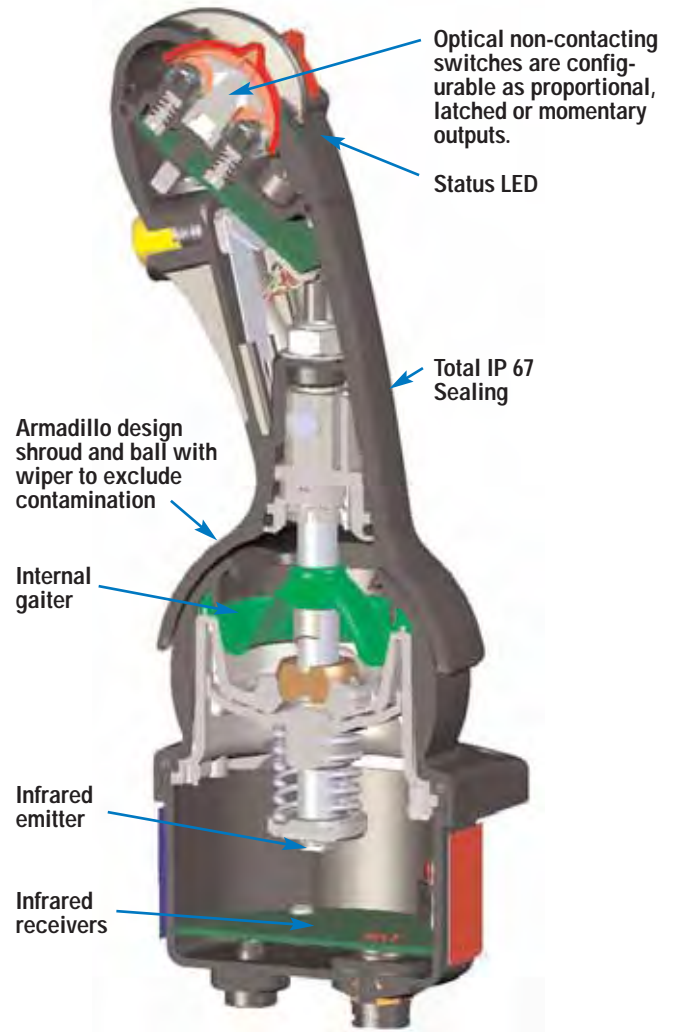
Engineered polymer handle with a contoured hand support offers increased operator comfort.

# General Information

## Features and Benefits

- Increased productivity and functionality
- Modular design - tailored to individual applications
- Designed to meet IP67 ingress protection rating
- EMC certified
- Programmable functions
- CAN bus outputs
- Ability to interface with OEMs individual CAN bus protocols
- Additional digital/analog outputs and analog 5V supply for connecting to other machine functions
- Up to 4 axis of proportional control
- On-board diagnostics
- Exceptional reliability - non-contacting sensors
- Zero maintenance
- LED for system status and error warnings
- Ergonomic design

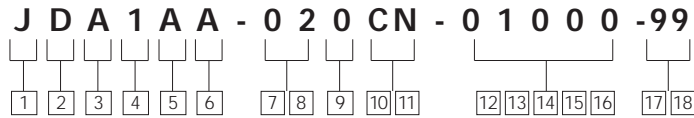
## Operating Cross Section



# Model Code

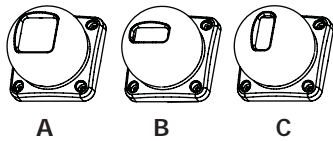
## Ultronics™ Joysticks

The product configuration model code is used to specify particular features when ordering an Ultronics Joystick.



### Base and Grip (Model code positions 1-6)

- 1 Joystick Prefix**  
J – Ultronics Joystick
- 2 Output Type**  
D – CAN-BUS
- 3 Connector Type**  
A – Ultronics 12 Pin
- 4 Handle Type Option**  
0 – Non-Trigger  
1 – Trigger - Tactile Feel  
2 – Trigger - Non-Tactile Feel
- 5 Gate Shape**  
A – Square Gate  
B – X-axis only  
C – Y-axis only



- 6 Center Disc**  
A – Default

### Switch Pack: (Model code positions 7-11)

- 7 8 Switch Pack Configuration**
- |      |                         |
|------|-------------------------|
| 00 – | 22 –                    |
| 30 – | 10 –                    |
| 40 – | 01 –                    |
| 04 – | 11 –                    |
| 03 – | 13 –                    |
| 33 – | 14 –                    |
| 44 – | 31 –                    |
| 20 – | 41 –                    |
| 02 – | 12 –                    |
| 23 – | 21 –                    |
| 32 – | 55 –                    |
| 24 – | Barrier between rollers |
| 42 – | rollers                 |

- 9 LED**  
0 – No LED  
1 – With LED

- 10 11 Output Mode**  
CN – CAN digital

### Configuration: (Model code positions 12-16)

- 12 13 14 15 16 Code Reference**
- 01000 – Configurable CAN open  
02000 – Configurable J1939  
XXXXX – Pre-programmed

### Default: (Model code positions 17-18)

- 17 18 Joystick Suffix**  
99 – Default

### Joystick Cables

CABLE PART NUMBER	CABLE LENGTH CM (IN)
JAC1-100	100 (39.37)
JAC1-200	200 (78.74)
JAC1-300	300 (118.11)
JAC1-400	400 (157.48)
JAC1-500	500 (196.85)

Note: JAC1 cables are supplied without an 120 ohm CAN termination resistor. For options with a 120 ohm resistor, please contact an Eaton distributor.

# Specifications and Performance

## Operating Force

X Axis	8N (1.80 lbf) nominal
Y Axis	8N (1.80 lbf) nominal
Z Axis (Rollers)	4N (0.90 lbf) nominal
Trigger Buttons	4N (0.90 lbf) nominal
Switch Pack Buttons	4N (0.90 lbf) nominal

## Operating Angle

X Axis	25 Degrees
Y Axis	25 Degrees
Z Axis (Rollers)	30 Degrees

## Product Life / Reliability

X Y Z Axis, Trigger / Switch Buttons	Ten million cycles
Maximum X Y Axis Load	400N (89.92 lbf)

Electrical Specifications	Minimum	Typical	Maximum	Unit
Rated input voltage	6.5	12	30	V
Rated input current	-	80	300	mA
Inrush current	-	-	2.5	A
Analog inputs	0	-	5	V
Status indicator	Tri-colored programmable LED to output joystick status or error code			

## Electromagnetic Compatibility

Product Standards	EN 13309 - EN 14982 - ISO 13766
Radiated immunity	ISO 11452-2,4,5 (100V/m)
Electrostatic discharge	ISO 10605 Level IV
Conducted emissions	CISPR-25: 1995
Radiated emissions	EN 13309, CISPR-25: 1995
Supply transients	ISO 7637-1,2

**Note-** External load dump protection devices recommended for systems prone to transients greater than level I (ISO 7637-1:1990).

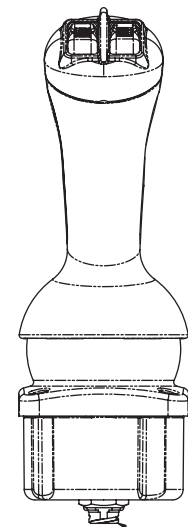
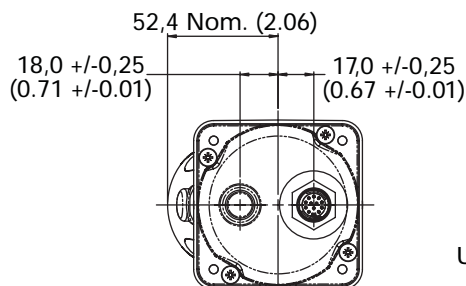
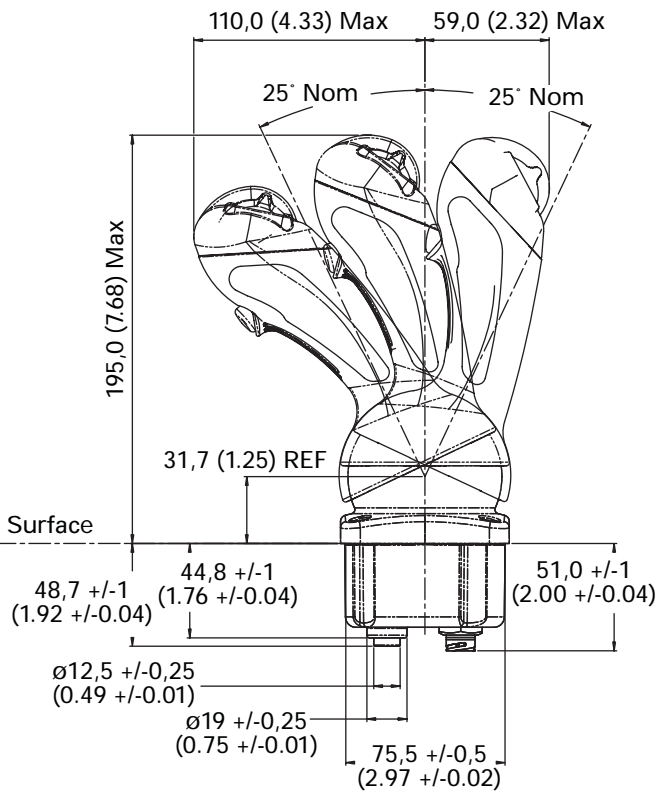
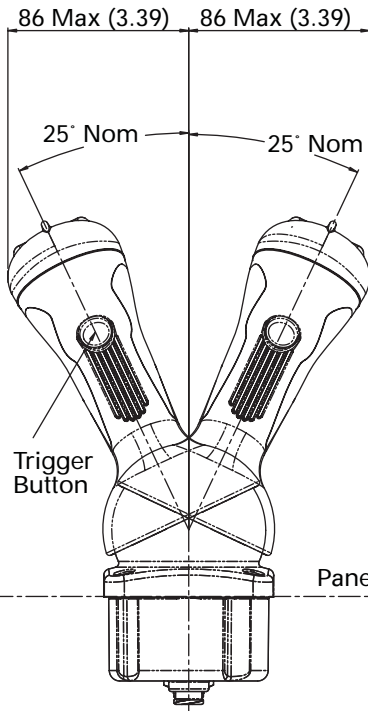
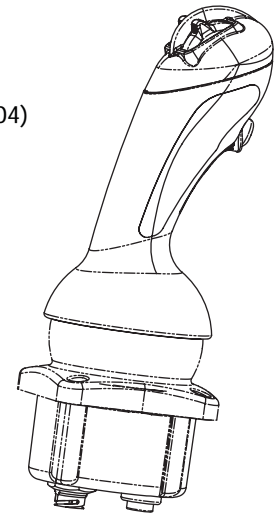
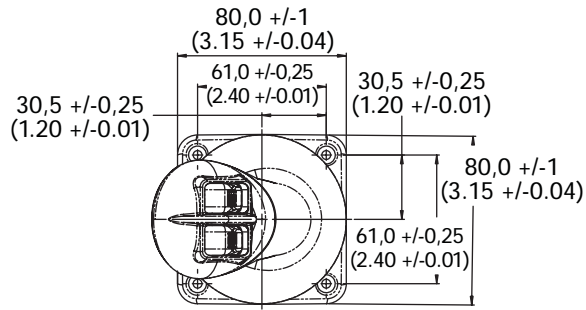
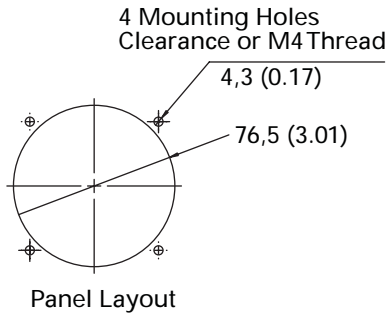
## Environmental

Operating temperature	-40°C to +75°C
Ingress protection rating	IP67

# Product Installation –

## Dimensions and Mounting

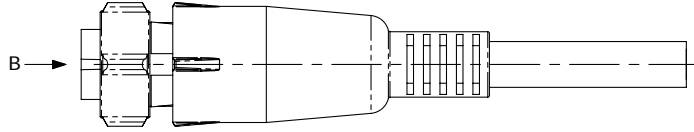
Dimensions are in mm (in)



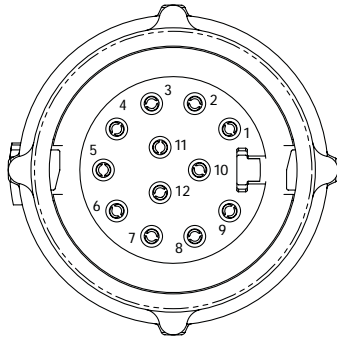
Ultrasonics 12 Pin Connector

# Product Installation –

## Connector Pin Assignments



### CAN Joystick Connections



SOCKET LAYOUT  
VIEWED ON ARROW B

PIN	FUNCTION	I/O	VOLTAGE	SIGNAL RANGE	SIGNAL TYPE	COLOR CODING
1	Supply +ve	Input	6.5-30V		Power DC	Red
2	Supply GND	Input	0V		Power DC	Green
3	CAN HI	Output	CAN/2.5-5V		Logic	Blue
4	CAN LOW	Output	CAN/0-2.5V		Logic	Yellow
5	ANALOG I/O GND	Output	0V		Power DC	Brown
6	ANALOG 5V SUPPLY	Output	+5V		Power DC	Grey
7	ANALOG INPUT	Input	0-5V		DC	White
8	DIGCH1	Input	0-5V		Logic	Purple
9	DIGCH2	Input	0-5V		Logic	Cyan
10	DIGCH3	Input	0-5V		Logic	Pink
11	Not connected	-	-		-	-
12	CAN cable shield termination	-	-		-	-

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**Hydraulics**

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