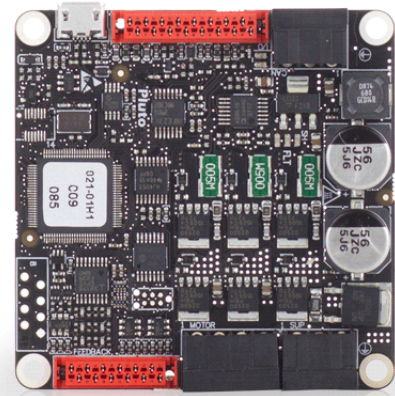


# PLUTO

## DIGITAL SERVO DRIVE

Ultra-compact, modular solution for control of rotary or linear brushless, brush DC or voice coil motors up to 800 W peak, with 8 A continuous output current and no heat sink needed. Accepts multiple command inputs including standalone operation.

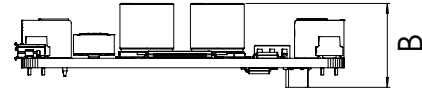
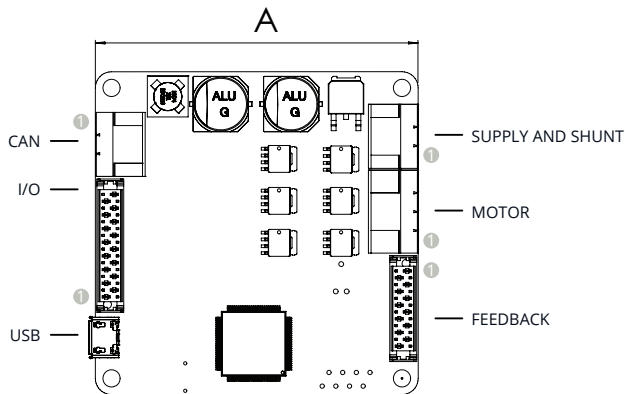
- ✓ Compact design
- ✓ Multiple motors
- ✓ CANopen and EtherCAT
- ✓ Motion controller capabilities



Pluto Digital Servo Drive	Units	PLU-1/48	PLU-5/48	PLU-8/48
Supply Voltage	$V_{DC}$	10 - 48		
Maximum Phase Peak Current (2 s)	$A_{RMS}$	2	10	16
Maximum Phase Continuous Current	$A_{RMS}$	1	5	8
Standby Power Consumption	W	1		
Efficiency	%	>95		
Supported Motor Types		Brushless, Linear Brushless, Brush DC, Voice Coil		
Commutation		Sinusoidal and Trapezoidal		
Minimum Motor Inductance	$\mu H$	300		
Power Stage PWM Frequency	kHz	40, 20 (Configurable)		
Current Sensing		$3\sigma$ , $\pm 1\%$ Accuracy, 10 bit		
Commutation Sensors		Digital Halls, Analog Halls, Incremental Encoder, PWM, Analog		
Supported Feedback		DC Tachometer, Digital Halls, Analog Halls, Quadrature Incremental Encoder, PWM, Analog		
Torque Loop Update Rate	kHz	10		
Position and Velocity Update Rate	kHz	1		
Motion Modes		Cyclic Sync, Interpolated, Profilers (Position, Velocity, Torque), Homing, Open Loop		
Supported Command Sources		Network, USB, Analog Input, PWM, Encoder Follower/Electronic Gearing, Step and Direction, Standalone		
Motion Controller		Yes, Standalone Operation with 64 Macros of 64 Commands		
Digital Inputs		4 (TTL and PLC)		
Analog Inputs		1 ( $\pm 10 V$ ), 1 (0-5 V)		
Digital Outputs		2 (TTL and PLC)		
User Configurable Protections		Bus Overvoltage and Undervoltage, Over and Under Temperature, Over Current, Overload ( $I^2T$ )		
Hardware Protections		Short-Circuit Protections, ESD and EMI Protections, Inverse Polarity Supply Protection, High Power Transient Voltage Suppressor for Short Braking		
Software Protections		Mechanical Limits for Homing Modes, Hall Sequence/Combination Error		
USB		Yes		
Serial		-		
CANopen		Yes (DS-301, DS-303, DS-305, DS-306, DS-402)		
EtherCAT		Yes (CoE)		
Ambient Air Temperature (operating)	$^{\circ}C$	-25 to 85 (over 50 with current derating)		
Ambient Air Temperature (storage)	$^{\circ}C$	-40 to 125		
Maximum Humidity (non-condensing)	%	5 to 85		
Dimensions	mm (in)	60 x 60 x 15 (2.36 x 2.36 x 0.59)		
Weight	g (oz)	35 (1.23)		

# INGENIA PLUTO DIGITAL SERVO DRIVE

## DRAWINGS



Dimension (mm)	PLU-X/48
A	60
B	15

## PINOUT

FEEDBACK		CAN		SUPPLY AND SHUNT		MOTOR		I/O	
12	HALL_3	03	CAN_GND	03	SUP+	04	PE	16	+5V_EXT
11	HALL_2	02	CAN_L	02	SHUNT	03	PH_C	15	LS_GPI1
10	HALL_1	01	CAN_H	01	GND	02	PC_B	14	LS_GPI2
09	GND					01	PH_A	13	GND
08	ENC_Z- / REF-							12	AN_IN2+
07	ENC_Z+							11	AN_IN2-
06	ENC_B-							10	AN_IN1
05	ENC_B+							09	GND
04	ENC_A-							08	HS_GPI1- / PULSE- / PWM-
03	ENC_A+							07	HS_GPI1+ / PULSE+ / PWM+
02	GND							06	GND
01	+5V_OUT							05	GPO1
								04	GPO2
								03	GND
								02	HS_GPI2- / DIR-
								01	HS_GPI2+ / DIR+

## PART NUMBERING INFORMATION

**PLU X / XX - Y**

### Power model:

1/48 = 1A cont//2 A peak @ 10-48 VDC  
 5/48 = 5A cont//10 A peak @ 10-48 VDC  
 8/48 = 8A cont//16 A peak @ 10-48 VDC

### Interfaces:

S = USB  
 C = USB/CANopen  
 E = USB/EtherCAT

## Option

## Part Number

IO Starter Kit	A-IOKIT
Feedback Cable	C-PLU-FEED
IO Cable	C-PLU-IO

10-48  
V<sub>DC</sub>

8  
ARMS

400  
W



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