Barrett™
ADVANCED ROBOTICS

Puck® P4-16™

Barrett's latest advancement comes in the form of a 16mm high-performance Puck®. With patented dual iSense control, and onboard magnetic encoder, motor control has never been so sophisticated, yet so simple. This revolutionary design features snap-on connectors and daisy chain wiring for quick and easy integration with any low space, high-performance application.

NO SPACE? NO PROBLEM

The P4 - 16™ is designed to fit seamlessly in any situation. At just 1.2 cubic cm, 2 grams, and up to 1/4KW drive power, this motor controller elegantly balances power and size. While this motor controller runs complex space-vector commutation and constant high speed computations, implementation is about as simple as it gets.

P4-16™ mounted on EC-max 16 Motor (penny for scale)

LIGHT WEIGHT, HEAVY FEATURES

SIMPLICITY

Daisy Chain topology reduces wiring and enables a network of up 31 Pucks® per bus. With on-board encoder, the P4-16™ eliminates signal degradation, power loss, and cable bulk inherent to standard motor-control.

COMPACT DESIGN

At just 6mm tall, the P4-16™ fits snugly against the back of any motor. Just snap the Puck into place, and let decades of Barrett engineering handle the rest.

POWER AND ELEGANCE

With 250W of power, heat can be a challenge. With built in heatsink and an operating range of -25°C to 100°C, the P4-16™ offers near silent, fan-less performance without compromising speed or payload.

FEATURES

FEATURES

- High speed CANopen communication
- 5 Wire Bus Topology: 2xCAN, Bus Voltage, 12V, and GND
- Up to 31 controllers per bus
- Built in magnetic encoder
- 5V and 3.3V auxiliaries outputs
- Dual iSense current sensor
- Space-Vector Commutation
- 32-bit floating point processor
- Low torque ripple
- Quiet, fan-less operation
- Internal temperature sensors
- In-system field upgradeable firmware
- Digital Hall-array feedback
- Adjustable PWM frequency (up to 100KHz)
- Dual Analog Inputs (16-bit)
- Up to 6 Digital I/O
- External Encoder Capable: SPI or Quadrature
- SPI Master Peripheral Support

SPECIFICATIONS

Input Voltage: 12V-50V DC
Drive Current: 2.5A Continuous, 5A Peak
Output Power: 250W Peak
Dimensions: 16mm OD, 6mm Height
Mass: Total 2g
Absolute Encoder: 12-bit Angular Resolution
Bus Length: Max 20m
Operating Temp: -25°C - 100°C

Contact Us

(617) 252-9000 www.barrett.com

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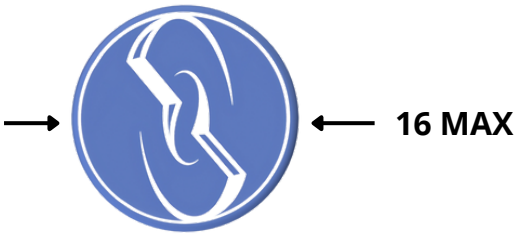
Barrett Puck® P4-16™ Motor-Interface-Board and Magnet-Mounting Specifications

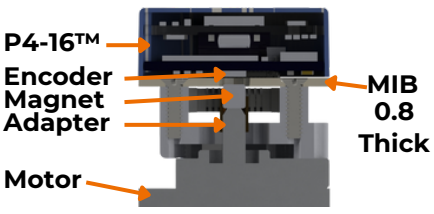
This page contains Motor-Interface-Board (MIB) specifications for Barrett Technology's Puck P4-16™ module. The MIB may be designed by the customer using the guidelines shown below. A 2 x 2mm magnet with a radial N-S field attached to the rotating shaft of the motor at the distance specified. Contact Barrett for design assistance.



All Dimensions in mm

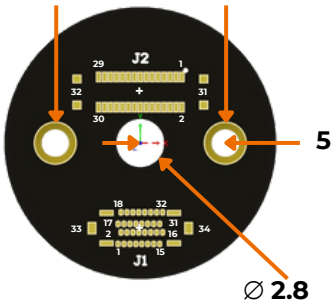
Power Connector on MIB			
Pin No.	**Name**	**Type**	**Description**
1-10	**Phase A**	Motor Lead	Output to Phase A
11-20	**Phase B**	Motor Lead	Output to Phase A
21-30	**Phase C**	Motor Lead	Output to Phase A
31	**VBus**	Power	VBus Input
32	**GND**	Power	Ground

Magnet standoff: 1.5 +/- 0.5 from encoder



Recommended Magnet: 2 ∅ N35 Neodymium

∅ 2.4 v 1.6 x 90°



Part	Manufacturer PN	Location
J1	Molex 5050663022	0, -3
J2	Molex 2033890323	0, 5

Signal Connector on MIB			
Pin No.	**Name**	**Type**	**Description**
1, 3	3.3V	Power	3.3V Output
2	Reset_B	Digital In	Factory-use Only
4	JTAG_TDI	Digital I/O	JTAG Data In
6	JTAG_TDO	Digital I/O	JTAG Data Out
8	JTAG_TCLK	Digital I/O	JTAG Clock
10	JTAG_TMS	Digital I/O	JTAG Select
12	ADC1	Analog I/O	12-bit 3.3V Input
13	I2C_CLK	Digital I/O	I2C Clock
14	ADC2	Analog I/O	12-bit 3.3V Input
15	**CAN_LO**	Digital I/O	CAN Low Diff.
16	**CAN_HI**	Digital I/O	CAN High Diff.
17	CS Digital I/O 2	Digital I/O	SPI Chip Select Digital I/O 2
18	SCK	Digital I/O	SPI Clock
19	MISO	Digital I/O	SPI MISO
21	MOSI	Digital I/O	SPI MOSI
23	EXT_QUAD_A Digital I/O 3	Digital I/O	Quad ENC In A Digital I/O 3
25	EXT_QUAD_B Digital I/O 4	Digital I/O	Quad ENC In B Digital I/O 4
27	Digital I/O 1	Digital I/O	I/O Pin 1
28	I2C_DATA	Digital I/O	I2C Data
29	Digital I/O 5	Digital I/O	I/O Pin 5
30, 32	5V	Power	5V Output
31	Digital I/O 6	Digital I/O	I/O Pin 6
33	**12V**	Power	12V Input
34	**GND**	Power	Ground
5, 7, 9, 11, 20, 22, 24, 26	NC	NC	Not Connected

All **BOLD** signals are mandatory connections

Contact Us

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US Patents: 11,290,043; 10,148,155; 7,893,644; 7, 854,631; 7,511,443