

## Appendix B Encoders

The MDrive14Plus Microstepping integrated motor and driver has optionally available either an internal magnetic encoder (differential only) or and external optical encoder (differential or single-end).

Both of these options have interface cables available.

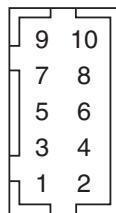
### B.1 Internal Magnetic Encoder

#### B.1.1 Available line counts

Line Count	Counts Per Rev (Quadrature)	Order Number
100	400	EAM
200	800	EBM
250	1000	ECM
256	1024	EWM
400	1600	EDM
500	2000	EHM
512	2048	EXM
800	3200	EFM
1000	4000	EJM

Table B.1 P2 Internal magnetic encoder

#### B.1.2 Connector P2 Internal magnetic encoder (differential)

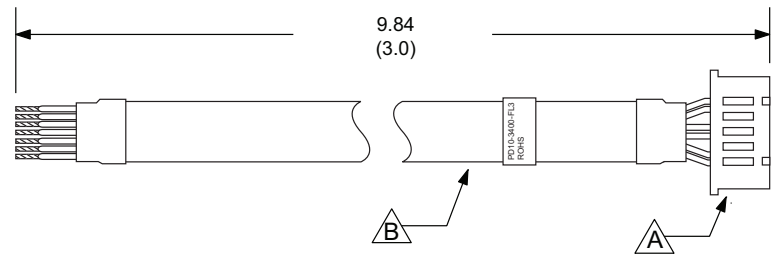


Pin #	Function	Description
1	EGND	Encoder ground
2	CHA+	Channel A +
3	CHA-	Channel A -
4	CHB+	Channel B +
5	CHB-	Channel B -
6	IDX+	Index mark +
7	IDX-	Index mark -
8-10	N/C	No connection

Table B.2 P2 Internal magnetic encoder

**B.1.3 Optional encoder cable PD10-3400-FL3**

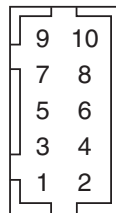
Dimensions in inches (mm)



**A** Connector: Hirose DF11-10DS-2C  
 Crimp Pins: Hirose DF11-2428-SC  
 IMS Connector Kit\*: CK-02  
 \*5 Mating Shells with Crimp Pins

**B** Cable: Belden P/N 8334 or Equivalent  
 24 AWG Shielded Twisted Pairs

Figure B.1 Optional encoder cable PD10-3400-FL3



Pin #	Function	Wire Color
1	EGND	White with Brown Stripe
2	CHA+	White with Green Stripe
3	CHA-	Green with White Stripe
4	CHB+	White with Orange Stripe
5	CHB-	Orange with White Stripe
6	IDX+	White with Blue Stripe
7	IDX-	Blue with White Stripe
8-10	N/C	Brown with White Stripe is not connected

Table B.3 PD10-3400-FL3 wire color chart

**B.1.3 Optional mating connector kit**

Order number CK-02

Description: 5 mating connector shells and crimp pins. Recommend Hirose Crimp tool (Not included).

Hirose Parts: Shell: DF11-10DS-2C  
 Pins: DF11-2428SC  
 Crimp Tool: DF11-TA2428HC

## B.2 External Optical Encoder

Externally mounted optical encoders are available as single end and differential.

### B.2.1 Available line counts

Line Count	Order Number	
	Differential	Single
100	EAL	E1
200	EBL	E2
250	ECL	E3
256	EWL	EP
400	EDL	E4
500	EHL	E5
512	EXL	EQ
1000	EJL	E6
1024	EYL	ER

Table B.4 External encoder line counts

### B.2.2 Mechanical Specification

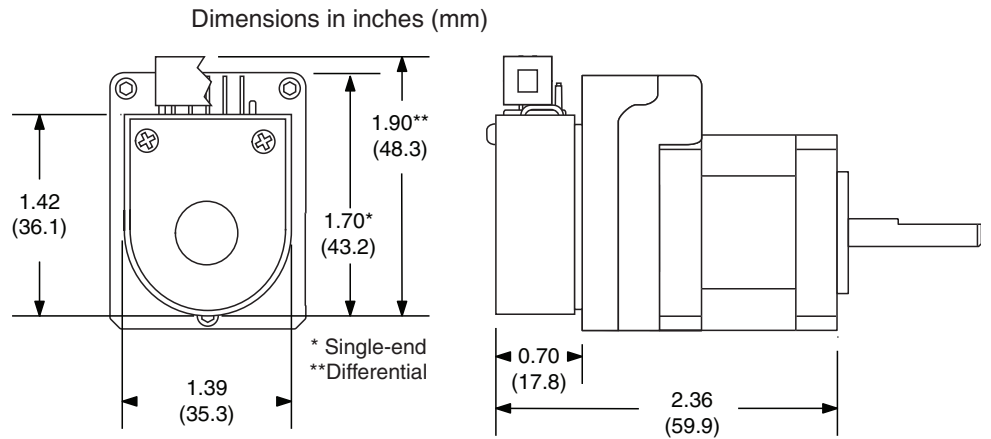


Figure B.2 External encoder mechanical specifications

**B.2.3 Pin Configuration**

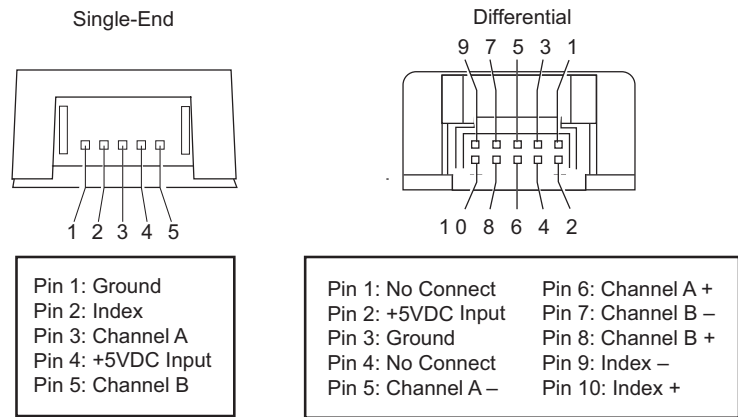


Figure B.3 External encoder pin configuration

**B.2.4 Optional interface cables**

*Single end ES-Cable-2*

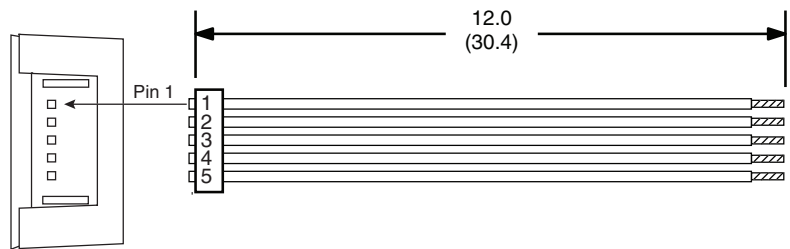


Figure B.4 Optional interface cable ES-Cable-2

Pin #	Function	Wire Color
1	GND	Brown
2	Index	Violet
3	CH A	Blue
4	+5 VDC	Orange
5	CH B	Yellow

Table B.5 ES-Cable-2 wire colors

Differential ED-Cable-6

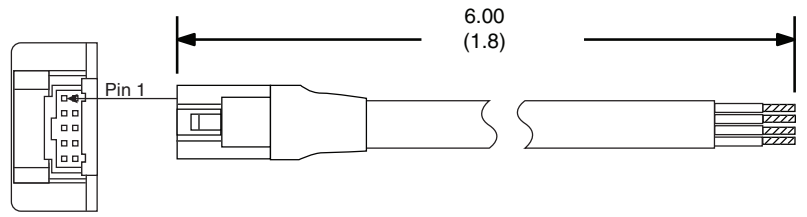


Figure B.5 Optional interface cable ED-Cable-6

Pin #	Function	Wire Color
1	N/C	—
2	+5 VDC	Orange with white stripe
3	Ground	White with orange stripe
4	N/C	—
5	CH A-	White with blue stripe
6	CH A+	Blue with white stripe
7	CH B-	White with green stripe
8	CH B+	Green with white stripe
9	IDX-	White with brown stripe
10	IDX+	Brown with white stripe

Table B.6 ED-Cable-6 wire colors

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