

CD120 SERIES

Introduction

Draw wire sensor assemblies combine a rotary sensor such as an encoder with a spring-loaded retractable cable on a drum. This provides a means to translate the precision of a rotary encoder into a linear measurement.



Features

- A full 120 inches (10 feet) of measurement capability.
- Wire drum is scaled so that one revolution = 1 foot of measurement.
- Mounting bracket and encoder position can be rotated in 90° increments to accommodate a variety of installation requirements.

Applications

- · Concrete, wood, steel sawing
- Mast height measurement for fork truck AGV's
- Extension measurement for small cranes
- Flood Control gates
- Hydraulic Cylinder Position



SPECIFICATIONS

Mechanical

Output Signal type	Optical Incremental Encoder in Quadrature with Index
Linearity	+/- 0.05% of full scale
Resolution	Range of Pulses per inch (Ref ordering block)
Cable Type	0.024" (0.60 mm) diameter stainless steel
Cable Tension	2.9 - 4.0 pounds (13 - 18 N)
Enclosure material	Aluminum
Weight	4.4 pounds, (2 Kg)

Electrical

Input Current	100mA (no load), up to 160 mA full load
Input Voltage	5-28 Vdc; Vout=Vin
Connector	M16, 7 pin Connector M18, 10 pin Connector SCS, cable Gland Seal
Mating Connector/Cable	31186-18XX, XX = cable length in feet
Drum Circumference	12 inches (304.8 mm)



Enviromental

Enclosure Protection Rating	IP66 with M16 or M18 connector IP65 with cable Gland Seal
Operating Temperature	-20°C to + 85°C
Storage Temperature	-20°C to + 85°C

Other Specifications

Maximum Velocity of cable	10 m/s
Maximum Acceleration of Cable	7 m/s²





on each side). Remove lowest screw drainage of trapped moisture







Standard termination with a captive washer which accepts a 6 mm (1/4") screw

CP termination: Threaded cable termination is attached to a clevis. The 4 mm diameter clevis pin is provided.



B2: A cleaning brush is factory installed to wipe away dust and moisture as the cable retracts



CD120 - 500 - ABZC - 28V/V - M18 - B2
Family
Draw-Wire Assembly 120 inches maximum travel Aluminum Housing
Resolution
10 counts per inch to 500 counts per inch (See Table, Below)
Output Type
ABZC = Two Channels in Quadrature + Index and complements = Std ABZ = Two Channels in Quadrature + Index ABZ = Two Channels in Quadrature + Index ABC = Two Channels in Quadrature plus complements Check with factory for other output types. End of the complement of
Electrical Uptions
28V/V = 5 - 28 V in. Vout = Vin 28V/5 = 5 - 28 V in. Vout = 5V regulated 28V/0C = 5 - 28 V in. Vout = Open Collector
Termination
 M18 = M18, 10 Pin Connector (used with ABZC) M18 - 10 = M18 Connector with Mating Cable/Connector Assembly, -10 = 10 foot length. Available lengths are 10, 20, 30, and 50 feet. M16 = M16, 7 Pin Connector (used with ABC or ABZ) M16 - 10 = M16 Connector with Mating Cable/Connector Assembly, as above. SCS-XX = Cable Gland Seal with XX feet of cable. Available lengths (XX) = 10, 20, 30 and 50 feet.
Available Features
BLANK = Standard Termination B2 = Built-in Cleaning Brush for cable CP = Clevis Termination



RESOLUTIONS TABLE

Resolution	Distance/ Count
10	0.100 "
25	0.040 "
50	0.020 "
100	0.010"
250	0.004"
500	0.002"
OMNI*	Programmable

*Available with M18 termination only

M16 Connector	Channels Designated in Model Number		
Pin	ABZ	ABC	
А	А	А	
В	В	В	
С	Z	Ā	
D	+V (Supply Voltage)		
E		B	
F	OV (Circuit Common)		
G	Case Ground (CG)		

The connector style will determine pinouts. For example, an encoder with ABC channels and an M18 connector uses the table to the right.

M18 Connector		
Pin	Channel	
А	А	
В	В	
С	Z	
D	+V	
E		
F	0V	
G	CG	
Н	Ā	
I	B	
J	Z	

Wire Color	Channels Designated in Model Number		
(22AWG)	ABZ	ABC	ABZC
YEL	А	А	А
BLUE	В	В	В
ORN	Z		Z
W-Yel		Ā	Ā
W-Blu		B	B
W-Orn			Z
RED	+V (Supply Voltage)		
BLK	OV (Circuit Common)		
GRN	Case Ground (CG0)		
WHITE	Shield Drain (Shielded Cable Only)		



WAVEFORM DIAGRAM

INDEX GATED WITH B LOW





AGENCY APPROVALS & CERTIFICATIONS



MOUNTING INSTRUCTIONS



CD120 Mounting Instructions

- 1. Mount the CD120 mounting plate securely to a stable flat surface using M6 or 1/4'' bolts and washers.
- 2. Attach the draw wire to your moving equipment using the eyelet provided with an M4, #8 screw or a 3/16" pin. If you have purchased a special termination, then use the mounting instructions for that wire termination.

🗥 WARNING:

- Damage may occur if draw wire is released and allowed to freely retract without tension.
- Make certain the draw wire path is clear of objects or sharp edges to prevent cable damage.
- Draw wire should exit as straight as possible. A pulley may be used to redirect it

How to Change Encoder Positioning

- 1. Remove the four #10-32 hex socket cap screws and washers from the encoder flange. (5/32 in. hex driver).
- 2. Rotate the encoder flange in 90° increments. You may need to pull it out a little to get it loose enough to turn.
- 3. If the encoder is completely removed, you can rotate the encoder shaft a little to align the driving gear with the draw wire hub. It should insert with little or no resistance. Do Not Force the gear into place.
- 4. Replace the screws and lock washers and tighten to 13 in-lb [1.4 N-m].

How to Change the Mounting Plate Position

- 1. Remove the four M4 hex socket cap screws from the mounting plate (3 mm hex driver)
- 2. Align the mounting plate on the side you wish to attach it.
- 3. Replace the screws and tighten to 13 in-lb [1.4 N-m].

