CARLENsensors AC130A Series

ABSOLUTE ENCODER

Analog

- Robustness and excellent resistance to shocks / vibrations
- High protection level IP65, IP67 option with a sealing flange
- Interface: Analog - Current , Voltage
- Universal electronic circuits from 5 to 30Vdc
- Reverse Voltage Protection and Over-Voltage Protection
- High resolutions available: 4096 (12 bits) ,Turn counting up tp 16 (4 bits)
- High performances in temperature –40°C to 85°C

ELECTRICAL CHARACTERISTICS - Interface Specific

Curent Options	4 - 20 mA		0 - 20 mA	
Load Resistance	R_L < 500 Ω with 15 V DC			
Linearity / Accuracy	0.15% / Accuracy at 4mA = ± 10µA ; at 20mA = ±50 µA			
Supply Voltage	15-30V DC (absolute maximum ratings)			
Supply Voltage Cutoff/Output Value	14.8 V / 3.6 mA		14.8 V / 0 mA	
Setting Time	80 ms			
Current Consumption	Typical 40 mA			

Current Options	0 - 5 V	0.5 - 4.5 V	0 - 10 V	0.5 - 9.5 V
Load Resistance	R_L > 10 k Ω with 12 V DC			
Linearity / Accuracy	0.15% / Accuracy at 5V = ±15mV ; at 10V = ± 25mV			
Supply Voltage	12-30V DC (absolute maximum ratings)			
Supply Voltage Cutoff/Output Value	11.8 V / 0 V	11.8 V / 0.25 V	11.8 V / 0V	11.8V - 0.25 V
Setting Time	80 ms			
Current Consumption	Typical 15 mA			

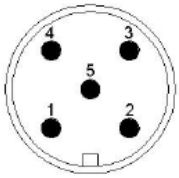
GENERAL DATA

Singleturn Accuracy	Calibrated ± 0.35 °
Mnimum Measurement Range	0 to 25 °
Turn On Time	< 1 s
Electrical Lifetime	> 10^5 h
EMC	EN61000-6-4,emitted interference ,EN 61000-6-2,nosie immunity

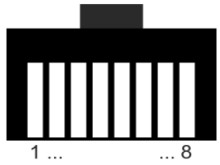
MECHANICAL CHARACTERISTICS

Housing	Aluminium
Shaft	Stainless Steel
Maximum number of revolutions permitted mechanically	12000 rpm
Shaft inertia	≤ 20 g.cm²
Starting Torque	≤ 2 N cm
Maximum load permitted on shaft	Axial 20 N,Radial 80 N
Protection	IP 65
Operating Temperature	-40°...+85° C
Storage Temperature	-40°...+85° C
Shock resistance	≤ 100 g (during 6 ms) (IEC 68-2-27)
Vibration resistance	≤ 10 g (10… 1 000 Hz) (IEC 68-2-6)
Weight	350g
Humidity	98% (without liquid state)

Electrical Connection (Front View)



5 pin M12 (male)



pinning RJ45

Signal	Cable	Connector Pin-No. RJ 45	Connector Pin-No. M 12
GND	yellow	4	3
+Ub Supply Output	red	8	2
Current / Voltage	green	3	1
Set 1	brown	2	5
Set 2	white	1	4
Shielding	Shielding	-	Housing

Scaling Functionality

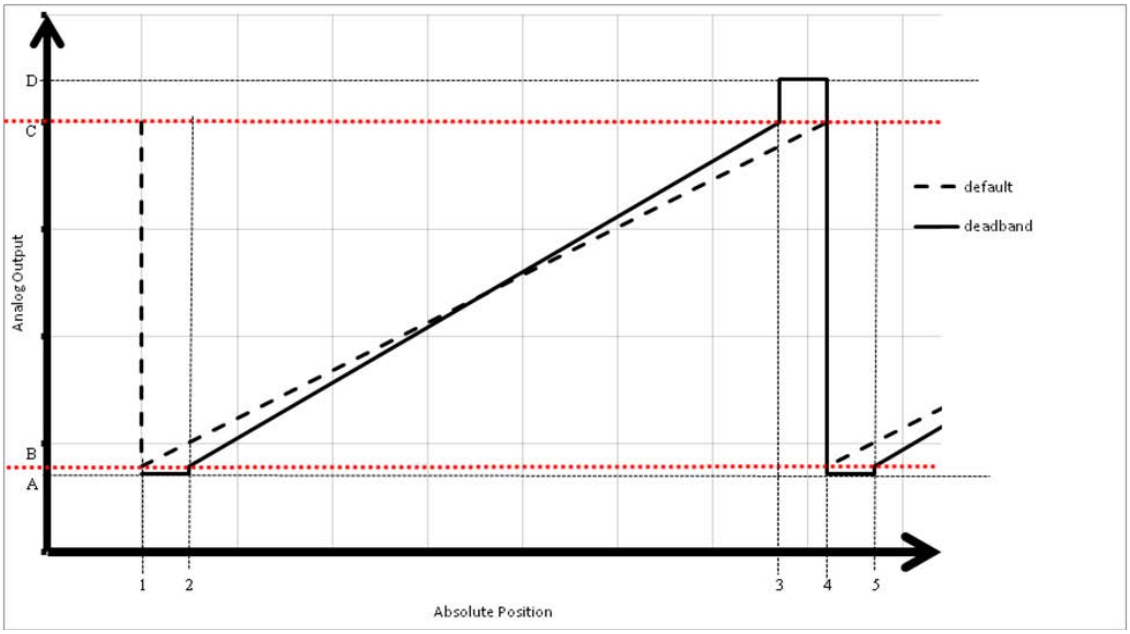
Using the Set 1 and Set 2 Input Signaks the messuring range wih the anglog output range be scaled.

- Turn the shaft to the min position (one end of the measuring range)
- Connect Set 1 Signal to high level for 1 second.
- Turn the encoder shaft to the max position (Other end of the measuring range)
- Connect Set 2 signal to high level for 1 second.
- Analog Output is scaled to the new measuring range.

Set 2 (White)	Set 1 (Brown)	Function
0 (Input = N.C. or GND)	0 (Input = N.C. or GND)	Normal Operation
0= (Input = N.C. or GND)	1 (Input $\geq$ 12V / Input $\leq$ Ub	Preset Zero Point
1 (Input $\geq$ 12V / Input $\leq$ Ub	0 (Input = N.C. or GND)	Preset Max Point
1 (Input $\geq$ 12V / Input $\leq$ Ub	1 (Input $\geq$ 12V / Input $\leq$ Ub	Set Midpoint of Default Scale*

* The default measuring range is restored. Output value corresponds to midpoint of scale.

OUTPUT CHARACTERISTICS



Encoder Type	Absolute Position Degrers				
	1	2	3	4	5
AC1300-2C10XX-0012-...	0	-	-	360° or 0°	-
User Scaled...-0012-...	0	Preset Zero	Preset Max	360° or 0°	Preset Zero
AC1300-2C10XX-0412-...	0	-	-	2^4 * 360° or 0°	-
User Scaled...-0412-...	0	Preset Zero	Preset Max	2^n * 360° or 0°	Preset Zero

n is any integer between 0 and 16

*** Refer to 'Models / Ordering Description' for detailed information**

Encoder Output Type	Analog Output Value in mA or V			
	A	B	C	D
4 - 20 mA (...-C5..)	3.6	4	20	22
0 - 20 mA (...-C6..)	-	0	20	-
0 - 5 V (...-V1..)	-	0	5	-
0.5 - 4.5 V (...-V3..)	0.25	0.5	4.5	4.75
0 - 10 V (...-V2..)	-	0	10	-
0.5 - 9.5 V (...-V4..)	0.25	0.5	9.5	9.75

ORDERING CODE

AC130A	-			-			-		-		-		-	SXX
a		b	d		e	f		g		h		j		Option

a **Series**
Absolute Encoder

b **Shaft Type/ Flange**
2C=Solid shaft, Clamp
2S=Solid shaft, Synchro
5B=Blind Hollow shaft

d **Shaft size**
Solid Shaft: 6,10 mm
Blind Hollow shaft: 6 mm

e **Interface**
C= Current
V= Voltage

f **Code**
1= 0-5V
2= 0-10 V
3= 0.5-4.5 V
4= 0.5-9.5 V
5= 4-20 mA
6= 0-20 mA

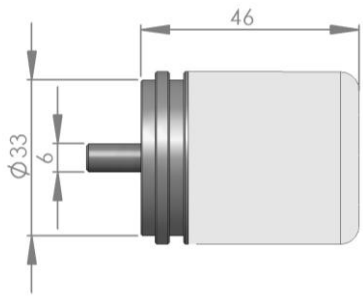
g **Nb of Turns / Resolution**
0012 0010 0412 ....

h **Connector Location**
1=Axial
2=Radial

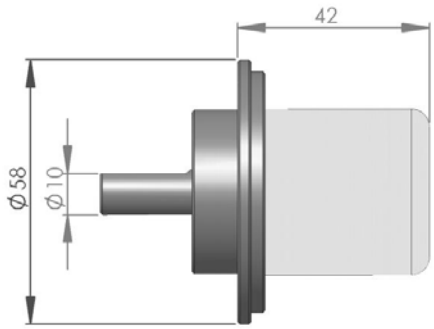
j **Connection**
6= 2m Cable (standard)
8= M12 Connector

MECHANICAL DRAWINGS

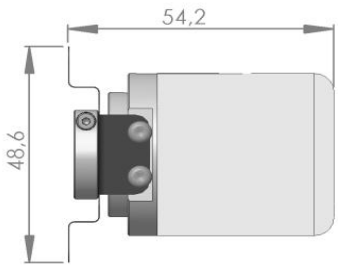
Synchro Flang, Cable exit 1m



Clamp Flange , Cable exit 1m



Blind hollow shaft



Axial M12 Connector