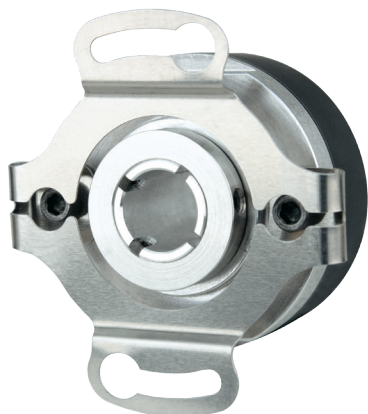


36RT/36RH ACCU-CODERPRO® - PROGRAMMABLE ENCODER



FEATURES

The 36RT/36RH is a programmable incremental encoder available in hollow bore and thru bore configurations. It offers high resolution, user selectable waveforms, commutation, and many other features when used with the PR2 Programmer. The small form factor and the standard EPC flex mounts allows for drop in interchangeability with existing systems.

- A high resolution encoder
- Resolutions from 1-100,000 CPR
- Customizable waveform output - choose from 40 options as well as commutation
- Teach index location
- Get up and running quickly with the optional PR2 programmer
- Up to 10mm bore size
- Reduce cost and inventory with a simplified system design - program as needed

COMMON APPLICATIONS

Servo Motor Control, Robotics, Specialty Assembly Machines, Digital Plotters, High Power Motors, AGV/AMR

36RT/36RH ORDERING GUIDE

Blue type indicates price adder options. Not all configuration combinations may be available. Contact Customer Service for details.

Model	Mechanical	Electrical				Environmental		
36R_	10 SF	000500	C00	V1	A0 HV	F00	T0	S0 NC
MODEL		CYCLES PER REVOLUTION		INPUT VOLTAGE		CONNECTOR TYPE⁴	OPERATING TEMPERATURE	
T Thru Bore		1-100,000 CPR		V1 5 to 28 VDC		F00 Fixed Cable (ft) flying lead ⁵	T0 -20° to 85° C (Std)	
H Hollow Bore						M00 Fixed Cable (m) flying lead ⁶	T6 -40° to 100° C ³	
						J00 Cable with 5-pin M12 ⁵	T7 -40° to 120° C ³	
						K00 Cable with 8-pin M12 ⁵		
	BORE SIZE		COMMUTATION		OUTPUT TYPE¹		SEALING	
	04 4 mm		C00 No commutation		HV Line Driver ²		S0 IP50 (Std)	
	05 5 mm		C01-32 Pole Pairs		OC Open Collector		S1 IP64 ⁸	
	06 6 mm				PP Push-Pull			
	08 8 mm				PU Pull-Up Resistor ³			
	10 10 mm							
	A3 3/16", 0.1875"							
	A4 1/4", 0.2500"							
	A5 5/16", 0.3125"							
	A6 3/8", 0.3750"							
	MOUNTING			WAVEFORMS			CERTIFICATION	
	SA 1.812" (46 mm) Two-hole flex mount			PROGRAMMABLE FEATURE			NC None (Std)	
	SB 1.142" (29 mm) Slotted flex mount			Select the initial index and waveform configuration to be programmed at factory. See all options in datasheet.			CE CE Marked ⁷	
	SC 1.2795" (32.5 mm) Slotted flex mount							
	SD 1.575" (40 mm) Slotted flex mount							
	SF 1.812" (46 mm) Slotted flex mount							

NOTES:

- 1 Output Type is not programmable
- 2 Line Driver output not available with 5-pin M12 connector. Please consult Customer Service.
- 3 See Input Voltage specification for PU input voltage limitations at temperature.
- 4 For mating connectors, cables, and cordsets, see Accessories at encoder.com.
- 5 For cable lengths in feet enter 'F' plus cable length expressed in feet. Example: F06 = 6 feet of cable.
- 6 For metric cable lengths enter 'M' plus cable length expressed in meters. Example: M06 = 6 meters of cable.
- 7 Please refer to Technical Bulletin TB-100: When to Choose the CE Mark at encoder.com.
- 8 IP64 only available for 36RH hollow-bore configurations.

36RT/36RH ACCU-CODERPRO® - PROGRAMMABLE ENCODER

SPECIFICATIONS

Electrical

Input Voltage	4.75 to 28 VDC for temperatures up to 85° C 4.75 to 24 VDC (16 VDC max for PU) for temperatures between 85° C and 100° C 4.75 to 5.75 VDC for temperatures between 100° C and 120° C
Input Current	100 mA max (65 mA typical) with no output load
Output Types ¹	Open Collector – 20 mA max per channel Push-Pull – 20 mA max per channel Pull-Up – Open Collector with 2.2K ohm internal resistor, 20 mA max per channel Line Driver – 20 mA max per channel (Meets RS 422 at 5 VDC supply)
Index	Once per Revolution, Programmable. See Waveform Diagrams.
Max. Frequency	1 MHz max, limited by shaft speed 200 kHz max for OC/PU, limited by shaft speed
EMC / CE	Immunity per EN 61000-6-2: 2019 Emissions per EN 61000-6-4: 2019
Quadrature Edge Separation	90° electrical or better is typical 52° electrical minimum
Accuracy	Within 1 Arc Min from True Position
Commutation	Up to 32 pole pairs
Commutation Accuracy	1° Mechanical

¹ Output type is not programmable and must be selected at time of order.

Mechanical

Max Shaft Speed	8,000 RPM. Higher speeds may be achievable - contact Customer Service.
User Shaft Radial Runout	0.13 mm [0.005"] max
User Shaft Axial Endplay	+/-0.76 mm [0.030"] max
Starting Torque	IP50 Blind Hollow Bore: 0.0007 N-m [0.1 oz-in] IP50 Thru-Bore: 0.0021 N-m [0.3 oz-in] IP64 Blind Hollow Bore: 0.0014 N-m [0.2 oz-in]
Weight	50 g (1.8 oz typical)
Shaft Type	Up to 10 mm thru-bore or blind hollow bore
Moment of Inertia	4.2 gm-cm ² (5.9 x 10 ⁻⁵ oz-in-sec ²)

Environmental

Storage Temp	-20° C to 85° C
Operating Temp	-40° to 120° C (see Input Voltage for limitations)
Humidity	98% RH non-condensing
Vibration	20 g, 10 to 2000 Hz (according to IEC 60068-2-6)
Shock	100 g @ 11 ms duration (according to MIL-STD-202G 213B)
Sealing	IP50 (DIN EN 60529); IP64 optional

WIRING TABLE

For EPC-supplied mating cables, refer to wiring table provided with cable.

Trim back all unused wires.

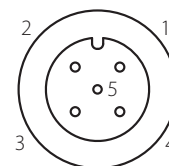
Function	Fixed Cable* Wire Color	5-pin M12**	8-pin M12**
Com	Black	3	7
+VDC	White	1	2
A	Brown	4	1
$\bar{A}$	Yellow	--	3
B	Red	2	4
$\bar{B}$	Green	--	5
Z	Orange	5	6
$\bar{Z}$	Blue	--	8
U	Violet	--	--
$\bar{U}$	Gray	--	--
V	Pink	--	--
$\bar{V}$	Tan	--	--
W	Red/ Green	--	--
$\bar{W}$	Red/ Yellow	--	--
Shield	Bare***	--	--

*Standard cable is 24 AWG conductors with foil and braid shield. Cable for commutated units is 28 AWG.

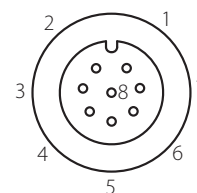
**CE Option: Use cable cordset with shield connected to M12 connector coupling nut.

***CE Option: Cable shield (bare wire) is connected to internal case.

M12 PINOUT DRAWINGS



5-pin



8-pin

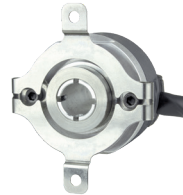
36RT/36RH ACCU-CODERPRO®-PROGRAMMABLE ENCODER

36RT/36RH FLEX MOUNT OPTIONS

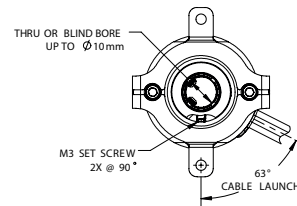
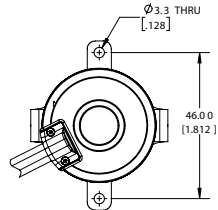
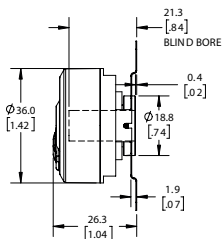
SA Mount



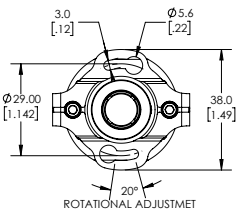
SA Mount



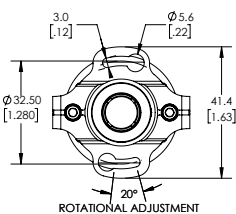
SF Mount



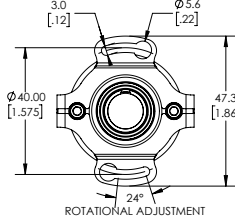
SB Mount*



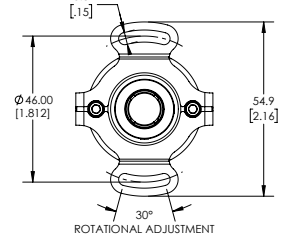
SC Mount*



SD Mount*



SF Mount



Note:

All dimensions are in millimeters [mm] with a tolerance of ± 0.005 " or ± 0.01 " unless otherwise specified.
 Imperial dimensions are given in brackets [in].

MOUNTING AND INSTALLATION KIT

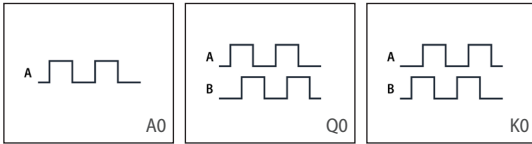
* Order appropriate no charge Mounting and Installation Kit for SB, SC, or SD option. Each kit contains 10 screws for mounting 5 encoders.

176150-01 Installation Kit, 4-40 buttonhead screws with 0.062" shortened hex wrench

176149-01 Installation Kit, M2.5 buttonhead screws with 1.5 mm shortened hex wrench

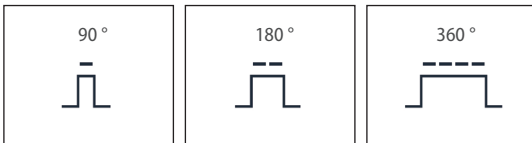
36RT/36RH ACCU-CODERPRO®-PROGRAMMABLE ENCODER

WAVEFORM OPTIONS

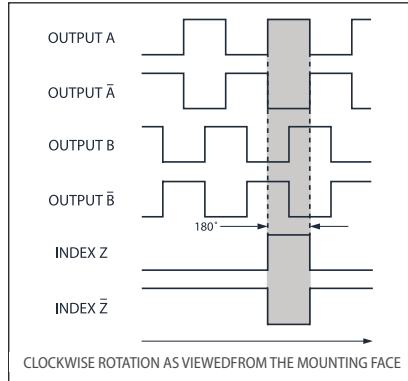


Programmability Note:

- If A0 option selected only CPR is programmable
- If Q0 or K0 option selected only CPR and quadrature direction are programmable
- If A1 thru Y4 option is selected CPR and any waveform is programmable



STANDARD EPC WAVEFORM (B5)



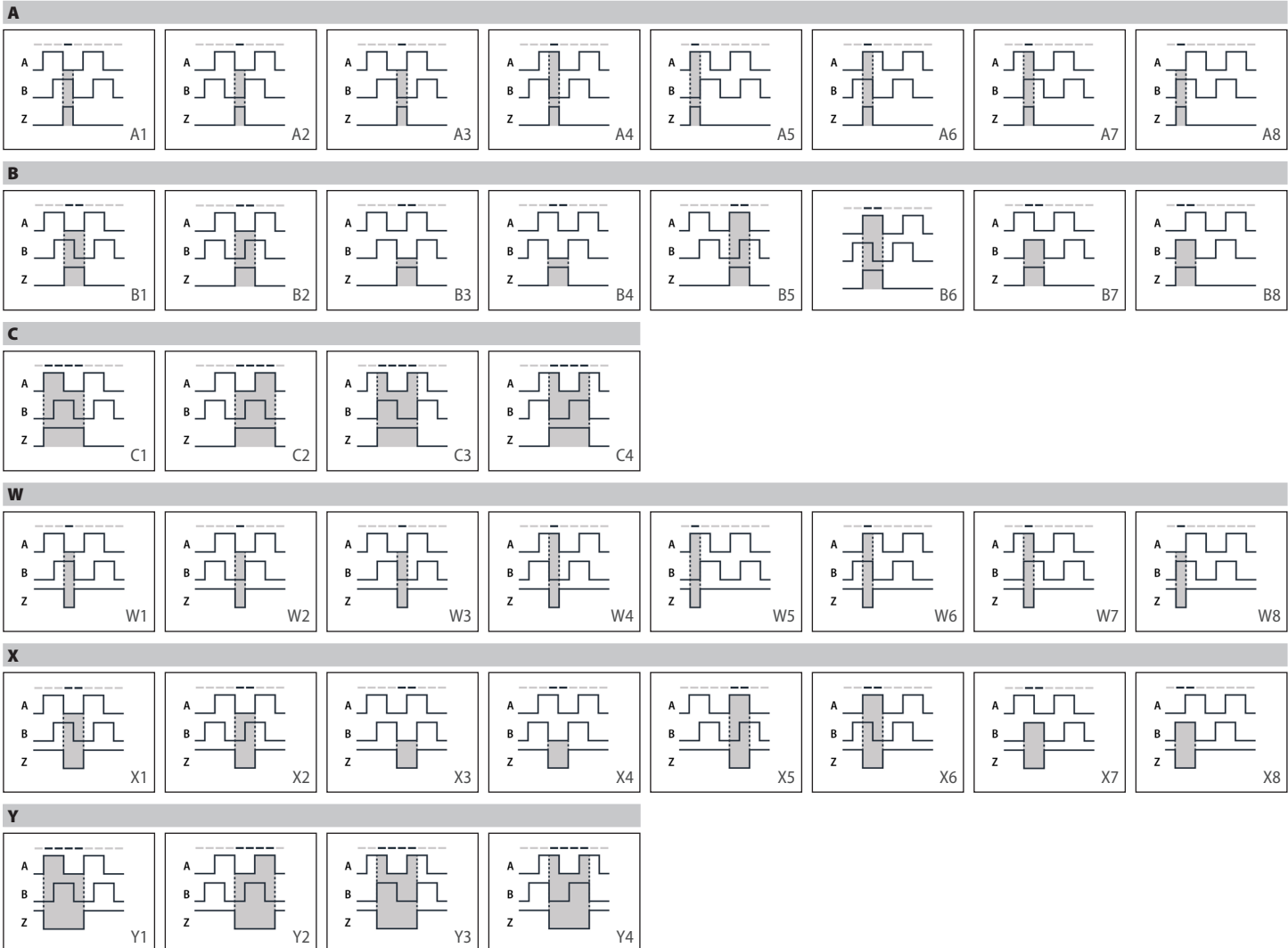
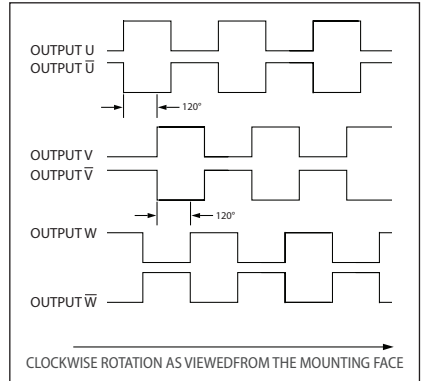
NOTE: ALL DEGREE REFERENCES ARE ELECTRICAL DEGREES.

Standard Waveform shown with optional complementary signals $\bar{A}$, $\bar{B}$, $\bar{Z}$ for HV output only.

Commutation Waveform shown with optional complementary signals $\bar{U}$, $\bar{V}$, $\bar{W}$

For Commutation, rising edge of Index Z is aligned with the rising edge of U in CW rotation and falling edge of U in CCW rotation.

COMMUTATION WAVEFORM



ACCU-CODERPRO® - PROGRAMMABLE INCREMENTAL ENCODER ACCESSORIES

PR2 PROGRAMMER

(Sold separately)



FEATURES

- Program the CPR to any resolution between 1-100,000
- Customizable output waveform - Choose from 40 options
- Teach index location
- Configure commutation settings
- Easily restore factory configuration
- Check temperature and diagnostic data
- Field calibration for better performance and accuracy
- View device information

PR2 ORDER GUIDE

Part #*	Encoder Connector
PR2-001-J	5-pin M12
PR2-001-K	8-pin M12
PR2-001-T	Flying Lead

*Includes PR2 Programmer and 2 meter USB Type-A to USB Type-C cable. Free software download from EPC website.

M12 CABLE CORDSET OPTIONS

Connector Type	M12 Connector Coding	Cable Length	CE Compatible ¹	Part #
8-conductor	A	1.64 ft (0.5 m)	No	075100
	A	6.56 ft (2 m)	No	075101
	A	13.12 ft (4 m)	No	075102
	A	19.69 ft (6 m)	No	075103
	A	32.81 ft (10 m)	No	075104
8-conductor	A	6.56 ft (2 m)	Yes	075200
	A	13.12 ft (4 m)	Yes	075201
	A	19.69 ft (6 m)	Yes	075202
	A	32.81 ft (10 m)	Yes	075203
5-conductor	A	3.28 ft (1 m)	No	075204
5-conductor	A	3.28 ft (1 m)	Yes	075211



Part #075100 shown, see table for options.
(for connecting 36RT / 36RH to controller)

¹ Shield Connected to Coupling Nut