



Encoder Specification & Selection Criteria for Inkjet Systems

To select the optimal encoder solution for each unique application, four primary encoder specification categories must be defined: Mechanical, PPR, Environmental and Interconnect. (Some of those variables are predetermined by encoder interface requirements. See chart, bottom of page):

Mechanical: Thru-bore encoders mount directly to the shaft via a collar, and are anchored by a flexible anti-rotation mount. Their bearings are designed to carry the encoder only. Shaft encoders can carry heavier loads and can be used with a measuring wheel. To define your mechanical requirements, determine the following:

- Space constraints
- Appropriate housing size
- The mounting method: to a motor, a driven shaft, a conveyor belt, etc.
- Whether or not loads will be applied to the bearings
- Whether or not a measuring wheel will be used

Pulses Per Revolution (PPR): PPR specification is commonly provided by the End Customer, Integrator or someone familiar with the system design and sensing/control requirements. See chart below for minimum PPR requirements.

Environmental: IP50 provides dust protection; IP64 or higher prevents ingress of extremely fine dust or moisture. Specify stainless steel and/or nylon for corrosion resistance (when possible).

Interconnect: For distances over 10 feet, select body-mounted connectors for ease of installation and after-market service. Integrated M12 cordsets are available on some models; Flying Leads are offered on all models. For cable lengths exceeding 30 feet, consult BEPC Technical Sales Engineers.

Encoder Interface Requirements:

1	Supply Voltage to Encoder	+ 24vcc
2	Encoder Output Type	Open Collector (OC), NPN, or Push Pull (PP) PNP
3	Number of Channels / Encoder Waveform	A & B in Quadrature
4	Max Encoder Frequency Response Output	200kHz
5	Min Encoder PPR	~ 20 pulse/mm linear travel

Note: Requirements may vary depending upon the manufacturer and model of inkjet printer. Consult the specific model's manual for these specifications.

Useful Definitions and Formulas

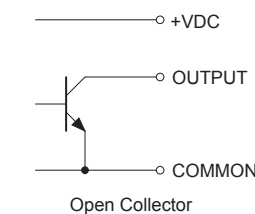
Frequency Response of Encoder Output

PPR x RPM	Hz	Hz	kHz
60		1000	

Encoder Pulses with Measuring Wheel

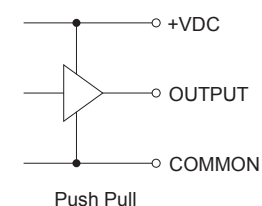
Encoder PPR	Encoder Pulses/mm
Pulley Diameter (mm) x π	

Open Collector

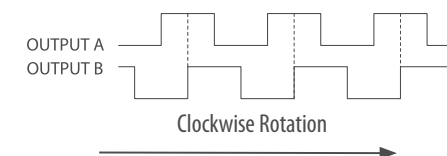


Designated **OC** in BEPC part numbers, this is an NPN type output. It is a current-sinking output that requires pull-up resistors external to the encoder. Typical values are 1.5K to 2.2K. BEPC's OC output allows for level shifting, where the encoder signal is pulled up externally to a different voltage.

Push Pull



Designated **PP** in BEPC part numbers, this is compatible with PNP circuits. Sometimes referred to as a "totem-pole" type of output circuit. When the output is in the logic high state, current is sourced to the load. When the output is in the logic low state, current is sunk from the load.



NOTE: All degree references are electrical degrees

NOTE: If system is bi-directional, then both A and B outputs are required

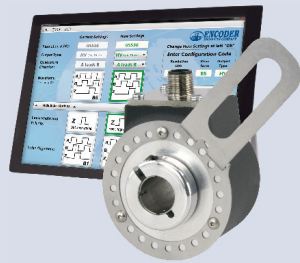
Solutions for Packaging, Printing, Labeling, Vision

Typical Examples of Select Encoder Applications for Inkjet Systems

Model 58TP Accu-CoderPro™

PROGRAMMABLE

- Size 58 mm thru-bore programmable encoder
- Programmable:
 - Resolution to 65,536 PPR
 - Output Type – six different options
 - Wave Form – choose from 32 options
- Standard and metric thru-bore sizes up to 5/8" and 16 mm
- Several flexible mounting options



Model TR1 Tru-Trac™

Model TR1 Features:

- Integrated Encoder and Measuring Wheel
- Overall Size Less Than 4 Inches
- Resolutions to 2540 PPR
- Operates Over a Variety of Surfaces
- Easy Installation in Many Orientations



Print Head

Marking

Labeling

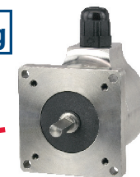
Sealing

Cutting

Model 802S Accu-Coder™

Model 802S Features:

- Industrial Ø2.0" Stainless Steel Encoder
- Resolutions to 30,000 PPR
- 0o to 100o C Temp
- Sealing to IP66
- Servo, Flange and Size 25 Mounts Available



Model TR3 Tru-Trac™

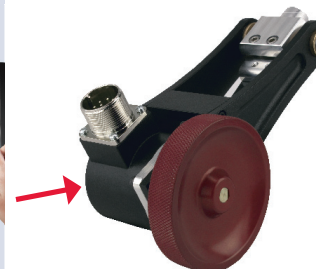
Model TR3 Features:

- Integrated Heavy Duty Encoder and Measuring Wheel
- Resolutions to 10,000 PPR
- Operates Over a Variety of Surfaces
- Speeds up to 3000 Feet Per Minute
- Easily Installed Vertically, Horizontally, or Upside-Down
- Single or Dual Wheel



Programmable Linear Measurement Solution

Use the Model 25SP with its special bracket for a programmable linear measurement solution!



Model 25SP Accu-CoderPro™ PROGRAMMABLE

- Standard Size 25 shaft encoder
- Programmable:
 - Resolution to 65,536 PPR
 - Output Type – six different options
 - Wave Form – choose from 32 options
- Shaft sizes up to 5/16" or 10 mm
- Flange and servo mounts
- Up to IP67 sealing available
- Operating temperature options



With a PROGRAMMABLE Accu-CoderPro™ encoder, you can use a Windows tablet or laptop to adjust the application's resolution on site by programming the encoder's PPR to different values, allowing you to test/tune the application.

