

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, CPR, Environmental, and Interconnect. Some of these 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 methods: to a motor, a driven shaft, a conveyor belt, etc.
- Whether or not loads will be applied to bearings
- Whether or not a measuring wheel will be used

Cycles Per Revolution (CPR): CPR 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 CPR 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. Intergrated M12 cordsets are available on some models. Flying Leads are offered on all models. For cable lengths exceeding 30 feet, consult EPC Technical Sales Engineers.

Encoder Interface Requirements:

1	Supply Voltage to Encoder	+ 24vdc
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 CPR	~ 20 pulse/mm linear travel

Useful Definitions and Formulas

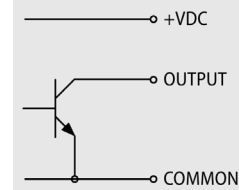
FREQUENCY RESPONSE OF ENCODER OUTPUT

$$\text{Hz} = \frac{\text{CPR} \times \text{RPM}}{60}$$

ENCODER PULSES WITH MEASURING WHEEL

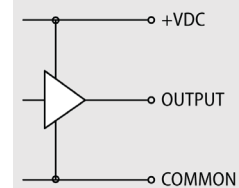
$$\text{Encoder Pulses/mm} = \frac{\text{Encoder CPR}}{\text{Pulley Diameter (mm)} \times \pi}$$

OPEN COLLECTOR

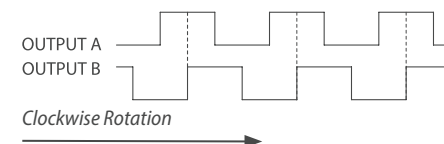


Designated OC in EPC part numbers, this is an NPN type output. It is a current-sinking output that requires pull-up resistors external to the encoder. Typical values are 1.5K to 2.2K. EPC's OC output allows for level shifting, where the encoder signal is pulled up externally to a different voltage.

PUSH PULL



Designated PP in EPC part numbers, this is compatible with PNP circuits and 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.



Solutions for Packaging, Printing, Labeling, & Vision

Select encoder applications for inkjet systems

PRINT HEAD

Common locations in-application



Accu-CoderPro™ Programmable Encoders*

- Programmable electronics:
 - Resolutions to 65,536 CPR
 - Output type: 6 different options
 - Waveform: Choose from 32 options
- Variety of shaft/bore sizes available
- Many flexible, rugged mounting options
- Up to IP67 sealing available

Model 58TP



Model 25SP

RX/TXD Splitter/Repeater/Converter

Have multiple devices that need an encoder signal? Or a long cable run to the controls in a noisy electrical environment? Used in conjunction with a single EPC encoder, the RX/TXD Splitter/Repeater provides signals that are compatible with other devices without the need of additional encoders.



- Convenient DIN rail package
- Output up to 3 additional signals with a single RX/TXD
- Combine several RX/TXD units to provide as many outputs as needed

Tru-Trac™ All-in-One Solutions

Compact linear measurement solutions

- Encoder and measuring wheel solution integrated into one compact unit
- Easily installed in a vertical, horizontal, or upside down orientation
- Operates over a variety of surfaces at speeds up to 3,000 feet per minute
- Available with a variety of measuring wheel sizes and materials
- Model TR3 available with single or dual wheels
- Up to IP66 sealing available
- Resolutions to 10,000 CPR



Model TR1



Model TR3

Model PLMS

Fits any Size 25 EPC encoder, including

- Model A25SB for Absolute feedback
- Model 725I Accu-Coder™ for additional bearing load
- Model 25SP Accu-CoderPro™ for programmable options
- Available with a variety of measuring wheels sizes and materials



*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 CPR to different values, allowing you to test/tune the application.

