

## Converting Between Single Ended and Differential

EPC offers a product that will convert single ended output signals to differential signals, and vice-versa. It is called the RX/TX Pulse Train Converter. Detailed information can be found in our product catalog.



RX/TX Pulse Train Converter

This product converts single ended signals into differential (RS422) signals for superior noise immunity. This allows an existing encoder with single ended outputs (Open Collector, Pull-up, or Push-Pull) to be used in applications where the differential signal type is required. Likewise, it also works the opposite way by converting differential signals back to a single ended open collector output. This is also useful when attempting to operate multiple loads from one encoder and the input characteristics differ on the devices.

Suppose one device requires differential inputs, and another device only requires an open collector NPN input. The ideal way to accomplish this task is to specify the encoder with differential outputs and use its output signals directly into the device requiring differential inputs. Then by adding the RX/TX converter, the single ended open collector NPN output can be easily derived for wiring directly into the input of the device that requires the open collector input.

Another very popular use of this device is when updating an older system. Over the years, the industry trend has been to move toward differential signals due to the inherently better electrical noise immunity (see TB-105). Quite often, to do a complete update to older machines, it requires the purchase of both a new encoder and a new counter or PLC. If the existing counter or PLC will accept the differential inputs and the encoder available has only single ended outputs, by use of the RX/TX converter, the old encoder can still be used. Any time there is a mis-match between the encoder and the counter or PLC, this is the device you need to correct the problem.

If you have additional questions please contact EPC Customer Service at 800-366-5412 or email [sales@encoder.com](mailto:sales@encoder.com).

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