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To: Nippon Pulse Reps/Distributors
From: Nippon Pulse Engineering Department
Re: SCR Stage Encoder Upgrade
Date: September 1, 2010

Effectively immediately, all Nippon Pulse SCR nanopositioning stages are available with a upgraded encoder, the Renishaw Tonic Encoder. Any stage built after September 1, 2010 and beginning with unit SN# 080210-001, comes standard with the upgraded Tonic Encoder.

The previous standard encoder was the Renishaw RGH24, which used optional and separate read switch end-of-travel limits. The move to the Tonic Encoder includes limit switches as a part of the new read head and makes end limits standard at no additional cost. This move optimizes performance and eliminates extra wiring needed with the optional limit switches.

Other benefits of using this new encoder on the SCR stages include improving interpolation feedback by four times, achieving 5nm resolution without the use of a large RGB interpolator, and increased resolution and speed options.

Hardware Implications

1. Improves interpolation feedback by over four times
- Provides many more resolution and speed options
- Can achieve 5nm resolution without the use of large RGB interpolator
- Tonic employs an interpolator into the connector
- Tonic employs limit switches as a part of the head
  - Magnets are added internally to the stage to sense the limit

2. Wiring interface is different

3. Change in limit switch wiring

Tonic Pin-out

Function	Output Type	Signal	Pin
Power		5 V Power	7
		5 V Sense	8
		0 V Power	2
		0 V Sense	9
Incremental Signals	RS422A Digital	A+	14
		A-	6
		B+	5
		B-	5
Reference Mark	RS422A Digital	Z+	12
		Z-	4
Limits	Open Collector	P	11
		Q	10
Shield	-	Innershield	Not Connected
	-	Outershield	Case

RGH24 Pin-out

Function	Signal		Color	16-pin D Type (D)
Power	5 V		Brown	7, 8
	0 V		White	2, 9
Incremental Signals	A	+	Green	14
		-	Yellow	6
	B	+	Blue	13
		-	Red	5
Reference Mark/Limit Switch	Z+/Q-		Pink	12
	Z-/Q+		Grey	4
Shield	Inner		Innershield	15
	Outer		Outershield	Case
Remote LED Driver	Green		N/A	N/A
	Red		N/A	N/A