
NEWALL

Newall Measurement Systems

SHG-TC Series ***(Spherosyn Distance-Coded)*** ***Linear Encoder***



Distance Coded Protocol

SHG-TC SERIES (SPHEROSYN DISTANCE-CODED) LINEAR ENCODER

(Revision 4.07.05)

Power Requirements	5Vdc +-5% < 350mA
Shock (11ms)	100g / 980m/s-2 (IEC 69-2-6)
Vibration (55-2000Hz)	30G / 294m/s-2 (IEC 68-2-27)
Ingress Protection Level	IP67
Operating Temperature Range	0 to 55 deg. C (32 to 131 deg. F)
Storage Temperature Range	-20 to 70 deg. C (-4 to 158 deg. F)
Scale Material	316 Grade Stainless Steel
Scale (Tube) OD	15.25mm (0.601")
Moving Force	20N
Standard Cable	15-core Cable with PUR
Max Cable Length	20m (65ft)
Cable Bend Radius (PUR)	Static: 12.7mm (0.5") Active: 50.8mm (2")
Cable Bend Radius with Armor	50.8mm (2")

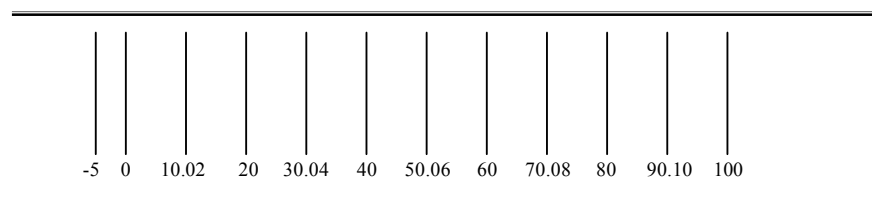
CONNECTIONS

FUNCTION	Colour	Fanuc Honda (PCR-E20FS) Pin	15 WAY D-TYPE PIN
*Reserved	Light Green + White	N/C	1
*Reserved	Orange	12	2
*Reserved	Pink + White	N/C	3
Z-	Grey	6	4
B-	Red	4	5
A-	Yellow	2	6
*Reserved	Pink	N/C	7
+5 VDC	Black	9, 18, 20	8
*Reserved	Light Green	N/C	9
*Reserved	Brown	N/C	10
*Reserved	Brown + White	N/C	11
Z+	Violet	5	12
B+	Blue	3	13
A+	Dark Green	1	14
0V	White	12, 14, 16	15

* These connections are reserved and are to be left unconnected.
Damage may result if incorrectly connected

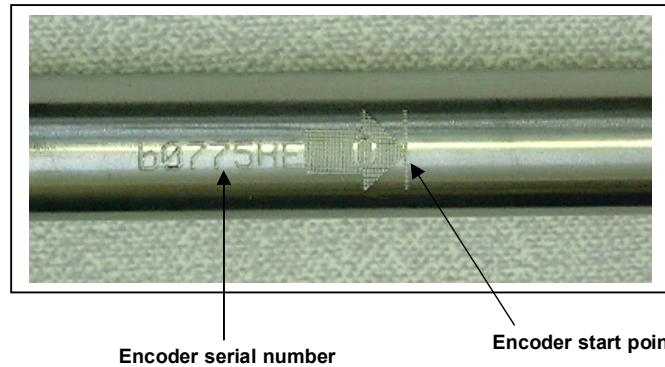
OUTPUT

The Distance-coded family of encoders allows for absolute position to be determined after a maximum of 20mm of movement. The coded sequence within the scale allows for the calculation of reference marker positions which conform to the requirements of most control systems capable of processing RS422 incremental signals with Distance-coded reference marks. The format of these reference marks can be seen below.



ZERO POINT MARKER

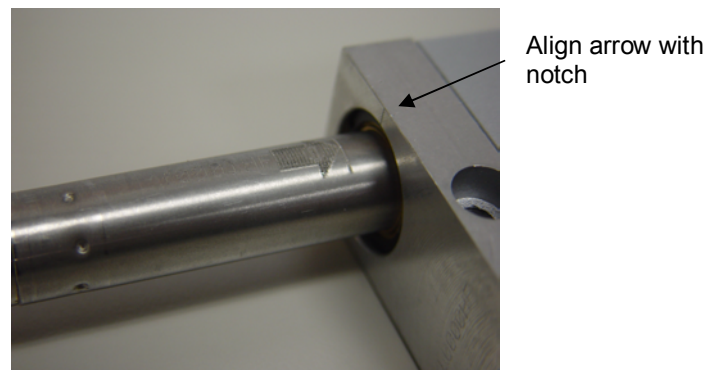
The scale is marked with an arrow and a line at the position where the usable travel starts. This point is 55mm in from the end of the scale.



INSTALLATION

Install the scale and reader head hardware as described in the Spherosyn Absolute, Distance Coded, and Digital SP Encoder Hardware Installation Manual (Code LEHM).

It is important to ensure that the scale and reader head are rotationally aligned before operation. There is an arrow etched into the tube that needs to be aligned with the notch in the reader head. Once aligned the scale brackets are tightened as detailed in the installation manual.



Apply power to the reader-head. The Signal LED on the front of the reader-head will go RED and then GREEN as it establishes position and performs its self-diagnostics.

Move the reader-head along the full length of travel from the scale (taking care not enter the unusable sections at either end of the scale). Cycle power periodically as you traverse the reader head along the scale. The reader-head LED should go RED then GREEN each time the power is turned on. If the LED stays RED then there is misalignment between the reader head and scale. If this occurs loosen the scale brackets and rotate the scale approximately 2-3 degrees. Tighten the scale brackets as described in the installation manual and repeat the process until the signal LED remains GREEN for the full period of travel. Once the LED has turned RED, the only way to get the GREEN LED is to cycle power while the encoder is properly aligned.

NEWALL MEASUREMENT SYSTEMS

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