

The DC HydraStar[®] is a variable inductance linear position sensor specifically designed for installation into hydraulic and pneumatic cylinders and actuators. The DC HydraStar[®] incorporates a compact, environmentally protected signal processor which requires only DC power to operate and gives outputs of 0 to 10V DC, ± 10 V DC or 4-20mA.

The DC HydraStar[®] transducer consists of a sensor body which is mounted to the end cap of the cylinder. The aluminum core includes a mounting collar which mounts to the piston rod. In operation, the HydraStar sensor body senses the position of the moveable core and gives an output directly proportional to the piston rod position. The transducer includes a 10 foot (3M) cable for connection to the signal processor

The DC HydraStar[®] Signal processor is packaged in an aluminum enclosure rated NEMA 4 (IP 65). This processor box contains all circuitry required by the HydraStar and includes a mating connector for excitation input and signal output.

A comprehensive instruction manual is provided with each DC HydraStar[®] to provide guidance in installation into the cylinder as well as system calibration.



FEATURES

- Fast 35 μ S response
- ± 10 V DC, 0 to 10V DC or 4-20mA outputs, adjustable
- Dynamic temperature compensation
- $\pm 0.25\%$ linearity, (improved linearities optional)
- +10 to +36 V DC input
- Body length only 1.3" longer than stroke
- Resistant to external fields (EMI, RFI)
- Absolute continuous measurement
- Single coil wound with large gauge wire

APPLICATIONS

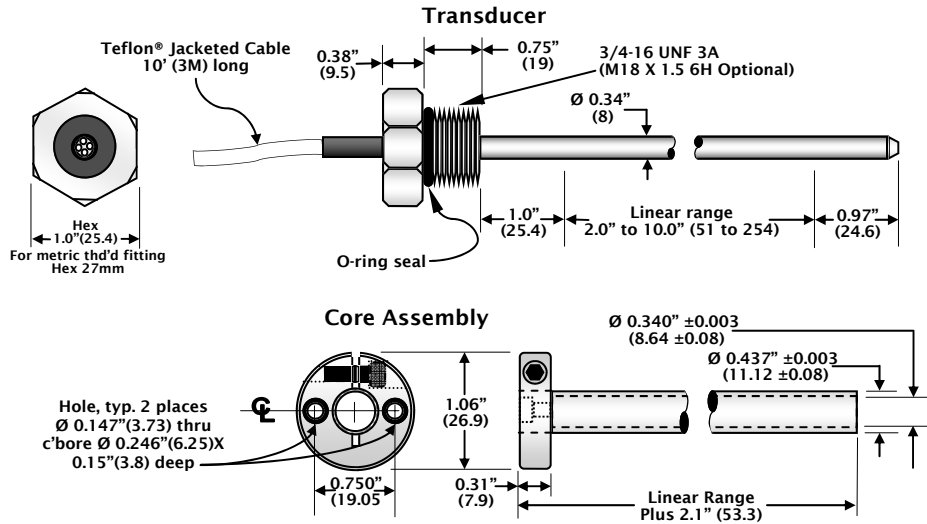
- Hydraulic cylinder position
- Hydraulic Valve spool position
- Pneumatic Cylinder position
- Pneumatic valve position
- Flight simulator Actuators
- Material handling systems
- Packaging machinery
- Liquid level measurements
- Military applications
- Injection molding machines
- Hydraulic press monitoring
- Aircraft flight controls
- X-Y positioning
- Underwater applications

BENEFITS

- Monitor high speed motions
- Works well with long cable runs
- Stable over a wide temperature range
- Excellent repeatability
- Suitable for mobile applications
- Ideal for limited space installations
- High signal to noise ratio
- Accurate position at power-up
- Better shock and vibration resistance than LVDT's

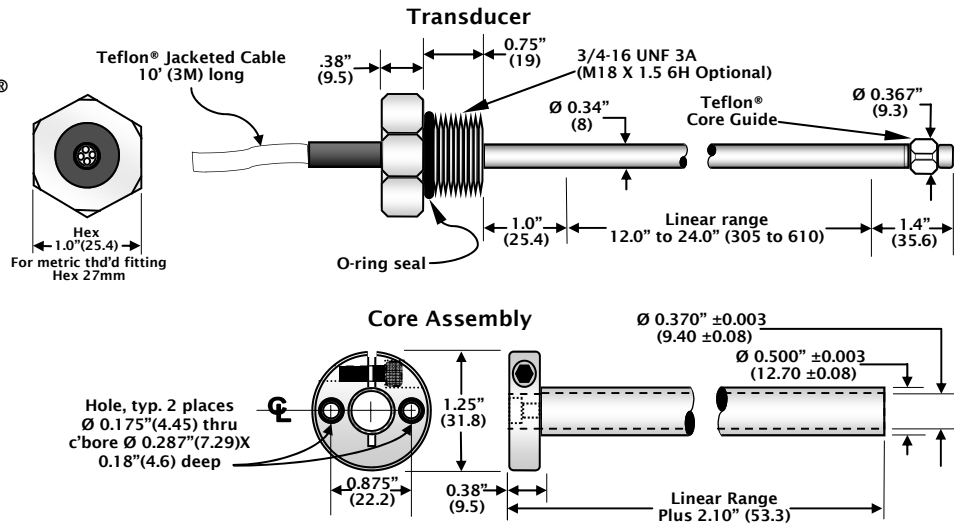
DC HYDRAS[®]STAR

**Short Range
Dimensions
DCHS 2 to
DCHS10
DCIHS 2 to
DCIHS 10**

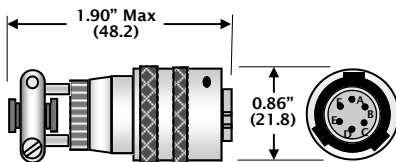


DC HYDRAS[®]STAR

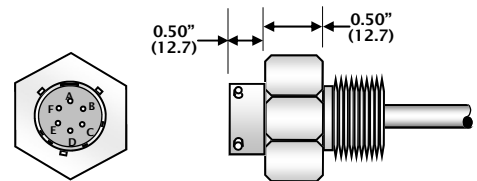
**Longer Range
Dimensions
DCHS 12 to
DCHS 24
DCIHS 12 to
DCIHS 24**



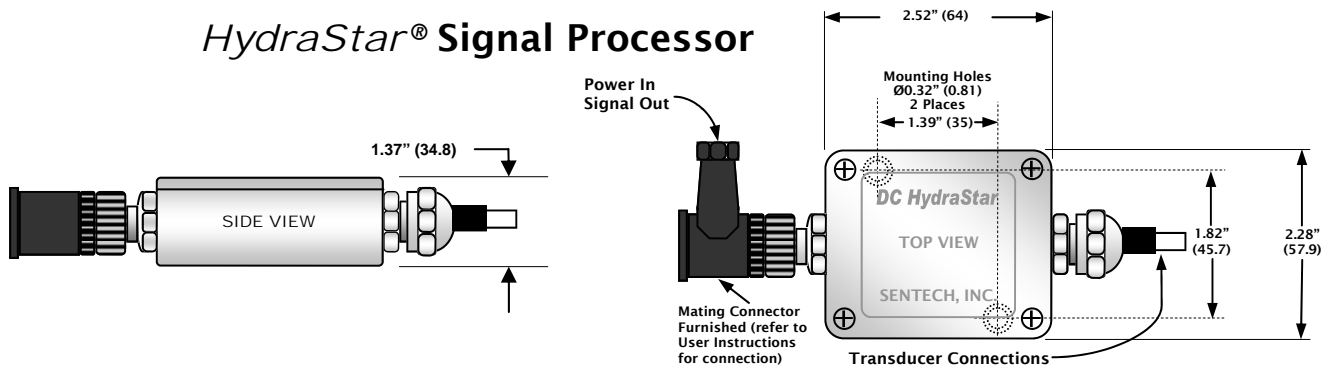
**Mating Connector
Amphenol PT06A-10-6S(SR)
Or Equivalent**



**HydraStar[®]
Optional Connector
Termination**



HydraStar[®] Signal Processor



Technical Specifications

Models, Voltage Output, $\pm 10V$ DC, 0-10V DC	DCHS2	DCHS4	DCHS6	DCHS8	DCHS10	DCHS12	DCHS18	DCHS24	
Models, Current Output, 4-20mA	DCIHS2	DCIHS4	DCIHS6	DCIHS8	DCIHS10	DCIHS12	DCIHS18	DCIHS24	
Nominal Linear Range	2 (51)	4 (101)	6 (152)	8 (203)	10 (254)	12 (305)	18 (457)	24 (609)	inches (mm)

TRANSDUCER

Non Linearity	0.25% standard (improved linearity optional)
Resolution	0.001% FS
Repeatability	0.003% of full scale typical
Compensated Temperature Range	25°F to 175°F (-5°C to 80°C)
Operating Temperature Range	-60°F to 221°F (-51°C to 105°C)
Vibration Resistance	Meets MIL-STD 810C, Figure 514-5, Curve AK Time Schedule II Random Vibration Test (Overall g rms=20.7)
Shock Resistance	100 g's peak (6 milliseconds) half sine
Transducer Construction	All stainless steel
Core	Aluminum with aluminum mounting collar
Normal Operating Pressure	3500 PSI (238 bar) (Higher pressure versions available)

ORDERING INFORMATION

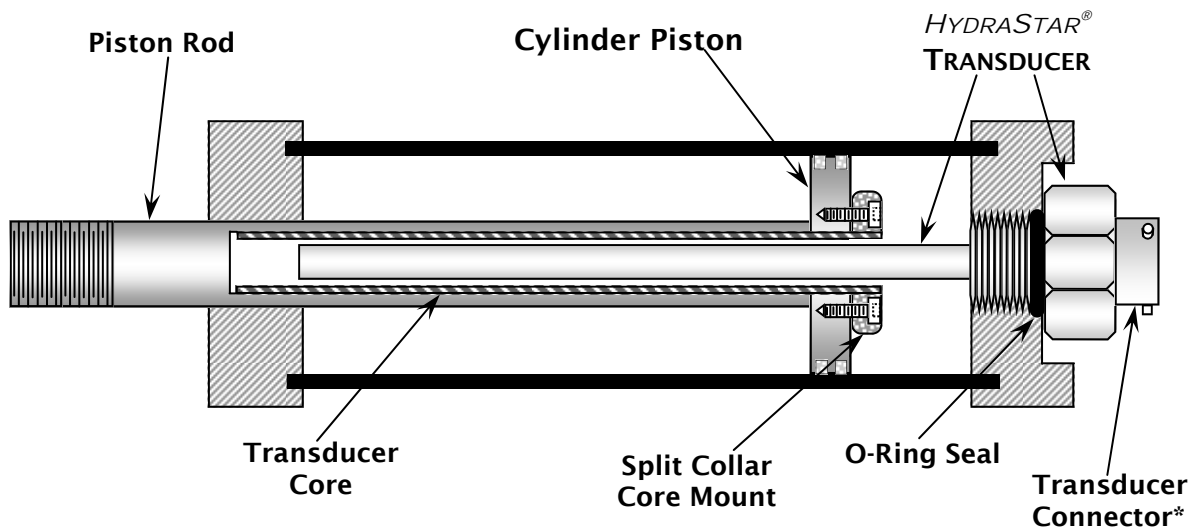
- Specify Model Number
- English threaded bulkhead fitting standard
For metric threaded bulkhead fitting, add "M" suffix to model # Ex: DCHS2M
- For improved linearity, consult factory

SYSTEM

Excitation	+10 to +36V DC@30mA+loop current (Supply current increases directly with loop current)
Output	$\pm 10V$ DC, 0 to 10V DC (DCHS) or 4-20mA (DCIHS) (Adjustable)
Frequency Response	DC to 10,000 Hz (-3 dB)
Response Time	35 μ s
Warm-up Time	2 minutes for excitation < +20V DC
Operating Temp. Range	-30°F to +140°F (-34°C to +60°C)
Temp. Coeff. of Span	-0.008%/°F (-0.016%/°C) FSO
Temp. Coeff. of Zero	-0.002%/°F (-0.004%/°C)
Transducer Connections	10 ft ± 2 " (3m) coaxial cable, Teflon® jacketed, cable dia: 0.1in (2.5mm)
Input/Output Connections	4 pin connector, mating conn: Turck #B8241-0, furnished. Recommended cable: 4 conductor #22AWG shielded
Controls	Zero and Span

Typical HydraStar® Installation into Hydraulic Cylinder

The figure below illustrates a typical installation of the HydraStar® transducer into a hydraulic or pneumatic cylinder. Please request Application Bulletin covering mechanical installation.



*Connector termination optional

ABOUT SENTECH, INC.

Sentech, Inc. manufactures a comprehensive line of linear and rotary position transducers as well as signal processors and support instrumentation.

Sentech's experience in designing and supplying position sensors spans over 30 years. Our customer list includes a broad spectrum of industries and applications. The chances are that Sentech has successfully designed and produced sensors for your application or one close to it.

Possessing an exceptionally strong design and application engineering staff, Sentech will work with your engineering people to apply the proper transducer solution to your specific application. We will see the job through until you are completely satisfied.

Our design, manufacturing and scheduling disciplines assure that either prototype or production units will arrive on-time and will be to your expectations. We believe that quality and service are keys to our success.

OTHER SENTECH PRODUCTS

LVDTs Linear Variable Differential Transformers provide absolute, linear position measurement. Their non-contacting design provides high reliability with no degradation of performance with respect to time or number of cycles of operation. LVDTs are available in AC-operated as well as DC-operated versions.

RVDTs Rotary Variable Differential Transformers employ the same high reliability feature as the LVDT except provide high precision rotary or angular position measurements. RVDTs are also available in AC or DC-operated versions.



Fastar® Companion to the HydraStar®, the Fastar® is a variable inductance, non-contacting linear position sensor, featuring very short overall length relative to the measurement range. The Fastar® offers very fast response to displacement input (up to 15k Hz) making them well suited for dynamic measurements. Units are available with integral or separate signal conditioners.

Special Applications Sentech, Inc. specializes in the design and manufacture of position sensors for special or unusual applications. We can supply units having differing package sizes, mounting configurations and electrical characteristics and specifications. Our design and application engineers stand ready to work with you to provide the transducer or transducer system that is tailored to your specific needs.

Fastar and related products are protected by one or more of the following patents: U.S. 4,667,158; 4,327,350; 4,368,575; 4,912,409; 4,864,232; 4,866,378; 5,068,607, 5115193; U.K. 0463236; Japan 1498268, 3275099; France 0463236; Sweden 0463236; Germany 5068607. Additional U.S. and Foreign patents pending.

Specifications subject to change without notice

WARRANTY

All Sentech, Inc. products are warranted against defective materials and workmanship. This warranty applies for a period of one year from the date of delivery to the original purchaser. Any product that is found within the one year period not to meet these standards will be replaced or repaired at the discretion of Sentech, Inc. No other warranty is expressed or implied. Although Sentech, Inc. manufactures its products to exacting specification standards, we assume no responsibility for their misuse. Sentech, Inc. accepts no liability for damages, incidental or punitive, in applications using our products. *Please note:* It is solely the user's responsibility to properly install and maintain transducers. Sentech, Inc. manufactures its products to meet stringent specifications and cannot assume responsibility for those consequences arising from their misuse or unauthorized modification.

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