



## Speed Sensor Option

The White Hydraulics speed sensor option provides a number of benefits to users by incorporating the latest advancements in sensing technology and materials. A new dual element sensor is now available, which provides twice the resolution of the standard sensor option. DT series motors are now available with 120 pulses per revolution while all other series motors are available with 100 pulses per revolution. Higher resolution is especially beneficial for slow speed applications, where more information is needed for smooth and accurate control. The dual sensor option also provides a direction signal allowing end-users to monitor the direction of shaft rotation .

Unlike competitive designs that breach the high pressure area of the motor to add the sensor, the White Hydraulics speed sensor option utilizes an add-on flange to locate all sensor components outside the high pressure operating environment. This eliminates the potential leak point common to competitive designs. Many improvements were made to the sensor flange including changing the material from cast iron to acetal resin, incorporating a Buna-N shaft seal internal to the flange, and providing a grease zerk, which allows the user to fill the sensor cavity with grease. These improvements enable the flange to withstand the rigors of harsh environments.

Another important feature of the new sensor flange is that it is self-centering, which allows it to remain concentric to the magnet rotor. This produces a consistent mounting location for the new sensor module, eliminating the need to adjust the air gap between the sensor and magnet rotor. The o-ring sealed sensor module attaches to the sensor flange with two small screws, allowing the sensor to be serviced or upgraded in the field in under one minute. This feature is especially valuable for mobile applications where machine downtime is costly. The sensor may also be serviced without exposing the hydraulic circuit to the atmosphere. Another advantage of the self-centering flange is that it allows users to rotate the sensor to a location best suited to their application. This feature is not available on competitive designs, which fix the sensor in one location in relationship to the motor mounting flange.



## Features

- Grease fitting allows sensor cavity to be filled with grease for additional protection.
- Internal dust seal protects against environmental elements.
- M12 or weatherpack connectors provide installation flexibility.
- Dual element sensor provides up to 120 pulses per revolution and directional sensing.
- Modular sensor allows quick and easy servicing.
- Acetal resin flange is resistant to moisture, chemicals, oils, solvents and greases.
- Self-centering design eliminates need to set magnet-to-sensor air gap.

## Single Element Sensor - Y & Z

Supply voltages ..... 7.5-24 Vdc  
Maximum output off voltage ..... 24V  
Maximum continuous output current ..... <25 ma  
Signal levels (low, high) ..... 0.8 to supply voltage  
Operating temperature ..... -22°F to +181°F

## Dual Element Sensor - X & W

Supply voltages ..... 7.5-18 Vdc  
Maximum output off voltage ..... 18V  
Maximum continuous output current ..... <20 ma  
Signal levels (low, high) ..... 0.8 to supply voltage  
Operating temperature ..... -22°F to +181°F

## Protection Circuitry

The single element sensor has been improved and incorporates protection circuitry to avoid electrical damage caused by:

- reverse battery protection
- overvoltage due to power supply spikes and surges (60 Vdc max.)
- power applied to the output lead

The protection circuit feature will help “save” the sensor from damage mentioned above caused by:

- faulty installation wiring or system repair
- wiring harness shorts/opens due to equipment failure or harness damage resulting from accidental conditions (i.e. severed or grounded wire, ice, etc.)
- power supply spikes and surges caused by other electrical/electronic components that may be intermittent or damaged and “loading down” the system.

While no protection circuit can guarantee against any and all fault conditions. The single element sensor from White Hydraulics with protection circuitry is designed to handle potential hazards commonly seen in real world applications.

## Sensor Connectors



Z



PIN

1	positive	brown or red
2	n/a	white
3	negative	blue
4	pulse out	black

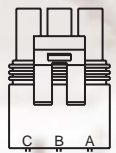
X



PIN

1	positive	brown or red
2	direction out	white
3	negative	blue
4	pulse out	black

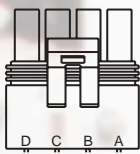
Y



PIN

1	positive	brown or red
2	negative	blue
3	pulse out	black
4	n/a	white

W



PIN

1	positive	brown or red
2	negative	blue
3	pulse out	black
4	direction out	white

## Sensor Options

### Z - 4-pin M12 male connector

This option has 50 pulses per revolution on all series except the DT which has 60 pulses per revolution. This option will not detect direction.

### Y - 3-pin male weatherpack connector\*

This option has 50 pulses per revolution on all series except the DT which has 60 pulses per revolution. This option will not detect direction.

### X - 4-pin M12 male connector

This option has 100 pulses per revolution on all series except the DT which has 120 pulses per revolution. This option will detect direction.

### W - 4-pin male weatherpack connector\*

This option has 100 pulses per revolution on all series except the DT which has 120 pulses per revolution. This option will detect direction.

\*These options include a 2' cable

## ST Series - Sensor Tester

The Sensor Tester (ST) is a device designed to test White Hydraulics speed sensors (Hall-Effect type). In addition, the ST will test most user's pulse detection systems (controllers and digital displays), competitive proximity and optical sensors, and cable continuity

The ST may be used as a stand-alone tester to verify sensors are operating correctly. This capability is the result of an internal battery and a built in magnetic label that is polarized with alternating north and south magnetic poles, similar to our current rotary magnet.

To test the sensor, connect it to the 12" output cable, select the "Sensor" function and swipe the sensor along the label/magnetic strip. If the sensor is operating correctly the user will receive a visual signal from a flashing LED and an audible beeping signal.

The ST can also be used as a stand-alone tester to check the operation of most pulse detection systems. The end user's system output cable can be disconnected from the speed sensor and connected to the input connector on the ST. When connected to the pulse detection system and selecting the "System" function, the ST will output a constant speed pulse, simulating an operational sensor. The tester will have the same outputs as listed above. The user can then check the system to see if it is displaying a reading (simulated speed/pulses will depend on system voltage so system pulse counts will vary from system to system).

The ST has output LEDs that display the selected function and operation. It also features an output LED that indicates if the system cable is supplying power to the tester. When power is supplied to the ST in this manner, power operates the ST and avoids draining the internal battery. When using system power, the ST has a trickle charge feature that extends battery life. Expected battery life is one hour.



## Order Codes

9701111AA	Tester with M12 4-Pin Connector
9701211AA	Tester with 3-Pin Weather Pack Connector
9701411AA	Tester with 4-Pin Weather Pack Connector



**Low Speed, High Torque Hydraulic Motors  
& Drive Products**