

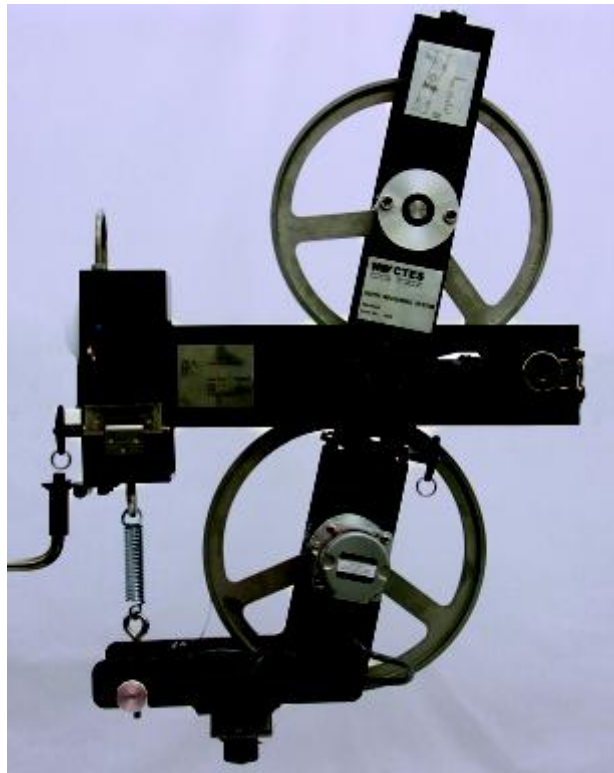
# Depth Measuring System (DMS™) for Hazardous Areas

CLASSIFIED FOR USE IN ATEX HAZARDOUS AREAS

Depth is the most important measurement made at the wellsite, yet conventional mechanical counters are often inaccurate due to pipe slippage past the single small-diameter friction wheel.

The NOV® CTES™ Depth Measuring System, or DMS, is a dual-wheeled measuring device for accurate depth measurements of coiled tubing operations at the wellsite or during reel-to-reel spooling.

The DMS also employs proprietary software-controlled slippage compensation for a significantly more accurate measurement of the length of tubing spooled.



Depth Measuring System (DMS™) for Hazardous Areas

## FEATURES\*:

- Adjustable for 1¼" to 2⅞" CT
- Dual wheel design with dual depth encoders
- Slippage detection and compensation via microprocessor using Fastest Wheel Algorithm (FWA)
- Internally mounted measuring wheel scrapers
- Integrates with Orion™ DAS and Cerberus™ to produce depth correction for temperature, stretch, and buckling
- Stand-alone device compatible with any data acquisition system
- Robust, field-proven design

## DATA MANIPULATION:

The display module is mounted in the control cabin of the coiled tubing unit. This module is used to display and reset depth and speed. This display module also houses the onboard processor that runs the FWA. Digital display meters show the measured depth from the top and bottom wheels, as well as the composite depth from the FWA. Quadrature signals can be fed to any data acquisition system. The three connectors on the right side of the display are the outputs to any DAS.

## HARDWARE:

The DMS is a precision measuring instrument. It is designed to be quickly and easily installed or removed from the CT prior to transport. A padded storage box is provided for DMS transport and storage.

\* DMS is also available without ATEX hazardous-area classification.

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## CUTTING-EDGE TECHNOLOGY

An ordinary depth counter's accuracy is hindered by depth wheel slippage. The DMS design works to alleviate this problem in three ways:

- To reduce slippage, the DMS uses a lever-arm movement to maintain a high frictional contact force between the measuring wheels and the tubing.
- Also to reduce slippage, the DMS uses two tungsten-coated stainless steel measuring wheels for accuracy and dependability in harsh operating environments.
- To correct for slippage, the DMS incorporates a microprocessor to run the "Fastest Wheel Algorithm" or FWA, while continually monitoring the speed of both wheels' electronic position encoders. The bottom wheel serves as master depth and the top wheel serves as backup depth. The top wheel takes over as master when the bottom wheel's speed is slower from slippage. The DMS displays a "composite" depth value.

**Better depth measurement means safer and more efficient operations, plus greater user confidence!**



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## Specifications

MEASURING HEAD		DISPLAY UNIT	
<b>Mechanical</b>		<b>Mechanical</b>	
Weight	42 lbs	Enclosure	13" x 9" x 4.5"
Length	30"	Type	IP 67
Height	24"	<b>Electrical</b>	
Width	13"	Supply Voltage	12VDC
Measuring Wheel Circumference	36"	Operating temperature range	-40° to 50° C
Coiled Tubing Sizes	1¼" - 2⅞"	Humidity	98% without condensation
<b>Electrical</b>		Hazardous Location Rating	Suitable for Class 1 Zone 2 Group A, B, C, and D or ATEX II 3 G Ex nR II T6 X
Supply Voltage	5 VDC		
Pulses per rotation	600		
Frequency response	100 kHz		
Output format	2-axis Quadrature		
Operating temperature range	-40° to 40° C		
Shock	50 Gs for 11-msec duration		
Vibration	5 - 2000 Hz @ 20 Gs		
Humidity	98% without condensation		
Hazardous Location Rating	Suitable for Class 1 Zone 0, Group IIB locations, or ATEX II 1 G EEx ia IIB T4 -40° C < TAMB > 40° C		

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