



Measure Systems For Gas and Oil Industry

MELDOR

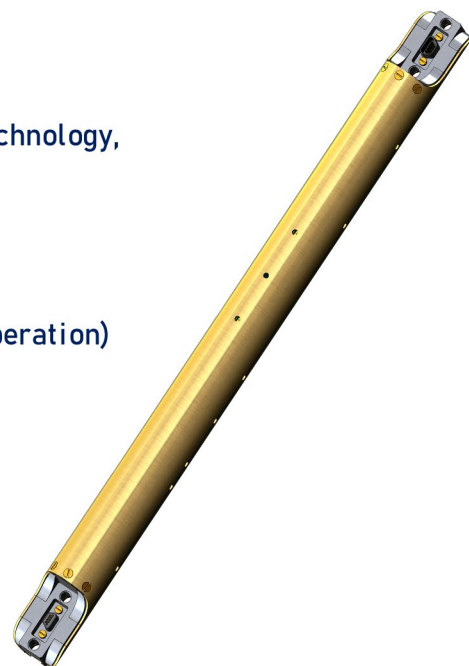
MWD/LWD Directional Sensor

Features

- Unique accelerometer-free technology
- The inclination and azimuth sensor manufactured in-house
- The inclination sensor is made using liquid capacitive sensor technology, it has high accuracy, impact resistance, and reliability
- High accuracy: ± 0.03 for inclination, ± 0.3 for azimuth
- High shock resistance
- Small size: OD 28 mm, length 378 mm
- Low consumption (no more than 0.5 W when all sensors are in operation)
- Compact design

Applications

- Directional drilling
- Logging while drilling
- Orientation of borehole logging instruments
- Measurement-While-Drilling
- Wireline tools.



The MELDOR directional sensor is a high-tech specialized device designed for integration into various types of magnetometric-inclinometric systems. The module provides highly accurate measurement of key parameters — magnetic azimuth, inclination, and rotation angle around its own axis — which is especially critical for monitoring and correcting the trajectories of vertical, inclined, and horizontal boreholes.

One of the unique features of the MELDOR directional sensor is the rejection of traditional accelerometers, which are commonly used in similar inclinometric systems. Instead, it employs next-generation liquid-based capacitive tilt sensors, which enable high-precision measurements — with a inclination error not exceeding $\pm 0.03^\circ$ and a resolution of up to 0.005° . These accuracy parameters represent a significant advancement over conventional solutions and open new possibilities for precise control of drilling operations.

The module includes a triaxial fluxgate magnetometer developed using advanced digital signal processing methods, which enhance dynamic performance and reduce measurement nonlinearity.

The module's design solutions ensure stable performance under elevated temperatures, vibrations, and mechanical loads, which is critically important for operation in the challenging conditions of oil and gas drilling.

The compact dimensions of the device (28 mm in diameter and 373 mm in length) make it suitable for integration into complex measurement assemblies consisting of up to five sequentially connected modules, including both inclinometric and gamma logging modules. This provides flexibility and versatility for a wide range of geophysical research tasks.

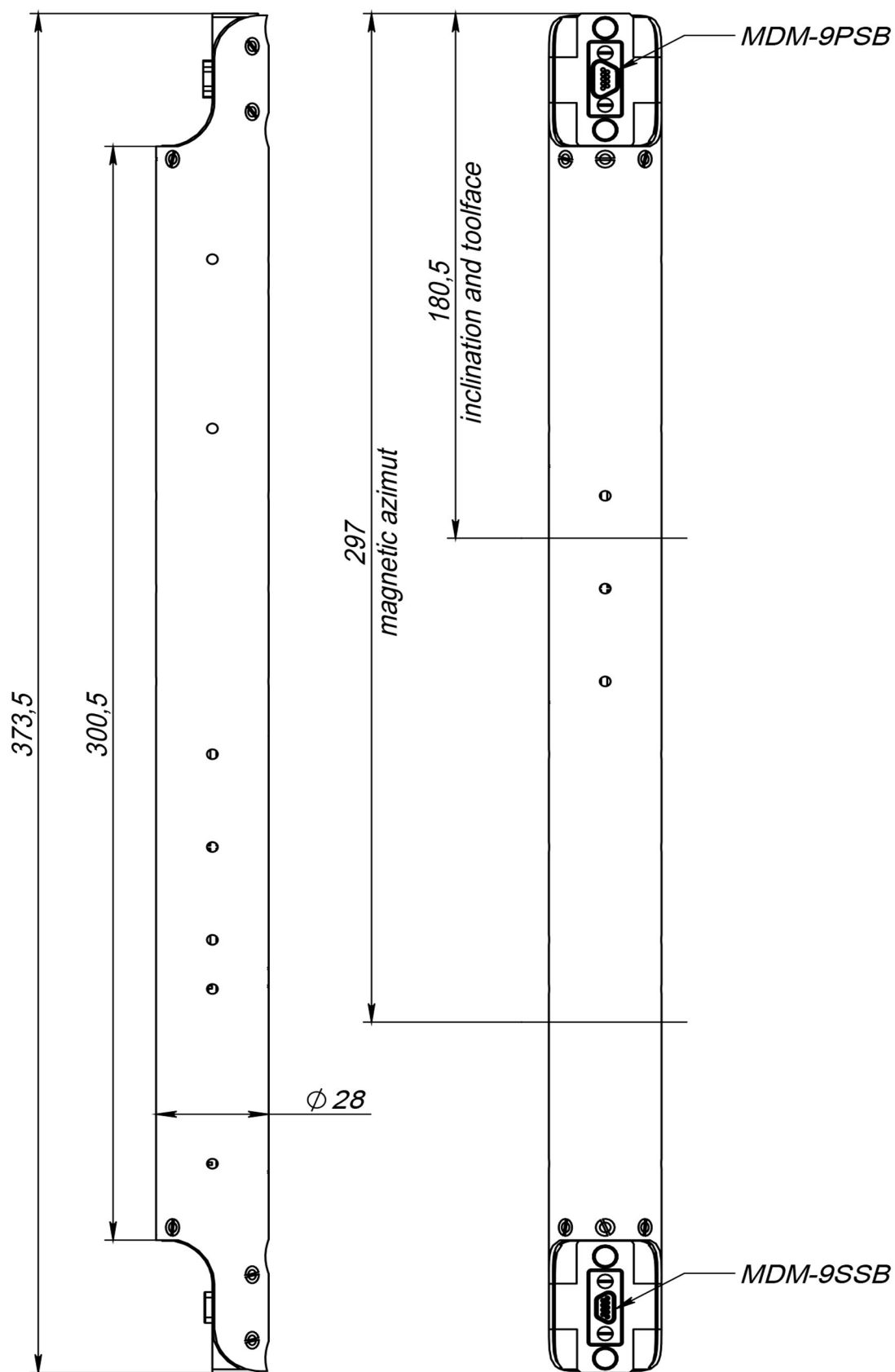
Calibration is carried out along a large number of predefined trajectories rather than at a limited set of points with subsequent interpolation. This approach ensures high accuracy and guarantees that the module's readings remain stable and reliable throughout the entire trajectory, including sections with sharp changes in inclination or direction.

In-house production of key components guarantees quality control and enables rapid adaptation of technologies.



PHISICAL		
Outside Diameter (OD)	mm	28
Length (housing type1/housing type2)	mm	300,5/373,5
Weight (housing type1/housing type2)	g	460/560
ELECTRICAL		
Input Voltage Range	V	5,4...6
Current consumption	mA	110
Power consumption	W	0,6
Protocol		(1)
End Connectors		MDM 9-Pin
ENVIRONMENTAL		
Temperature Operating	°C	-5...125
Shock survival (0.5 ms, half sine)	g	1500
PERFOMANCE		
Measuring range of magnetic azimuth	deg	0-360
Measuring range of magnetic components	μT	±70
Measuring range of inclination	deg	0-180
Measuring range of toolface	deg	0-360
Measuring range of temperature	°C	0-125
Toolface (Roll) absolute accuracy	deg	±0,2°
Azimuth absolute accuracy (Dip≤76°):		
inclination 90°	deg	±0,3°
inclination 10°		±1,0°
inclination 5°		±2,0°
Inclination absolute accuracy	deg	±0,03°
Inclination resolution	deg	0,005
Temperature absolute accuracy	°C	± 2°
Linearity error of measurement of magnetic components (over the entire temperature range)	%	<0,1
1. User selectable		

Housing type1:



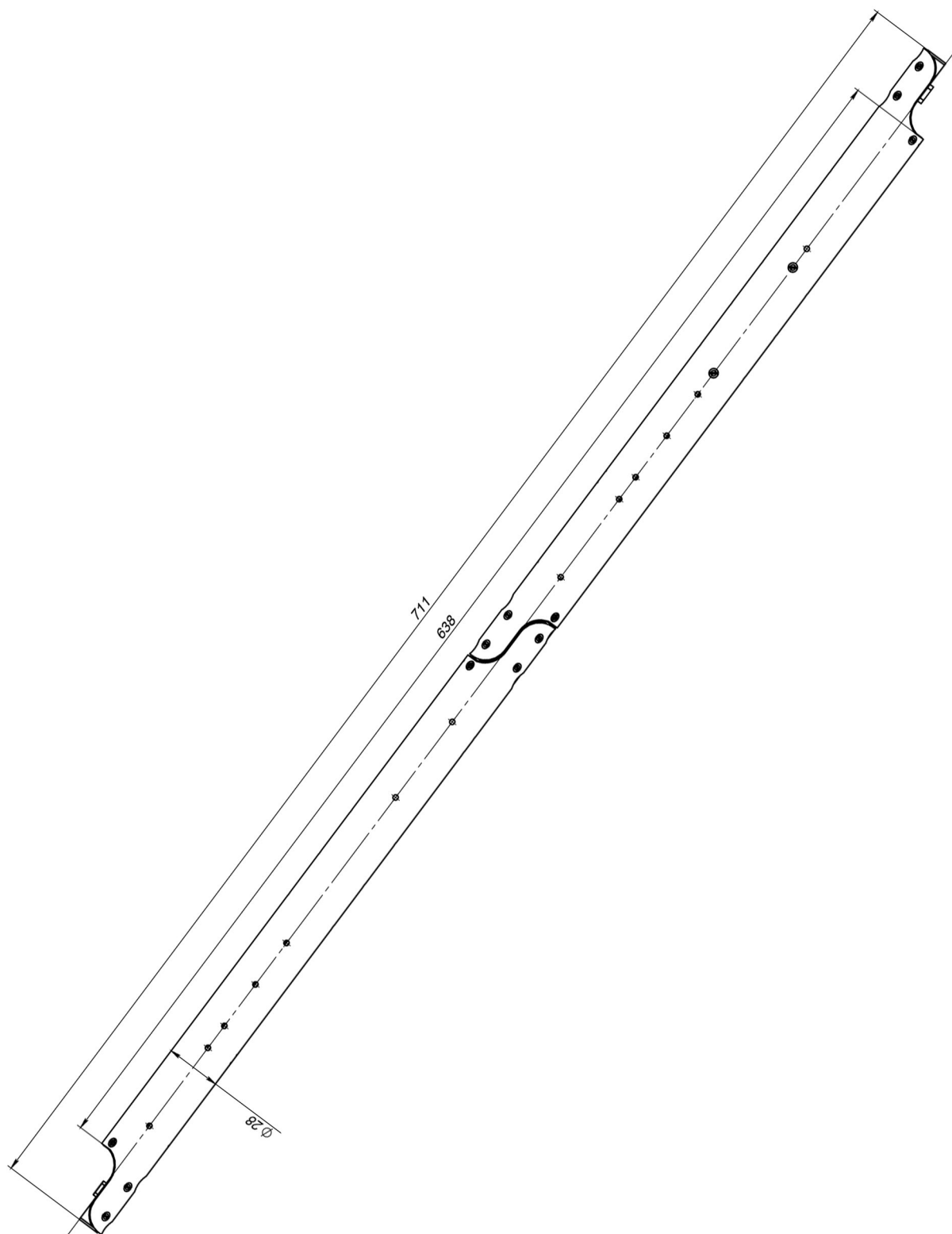


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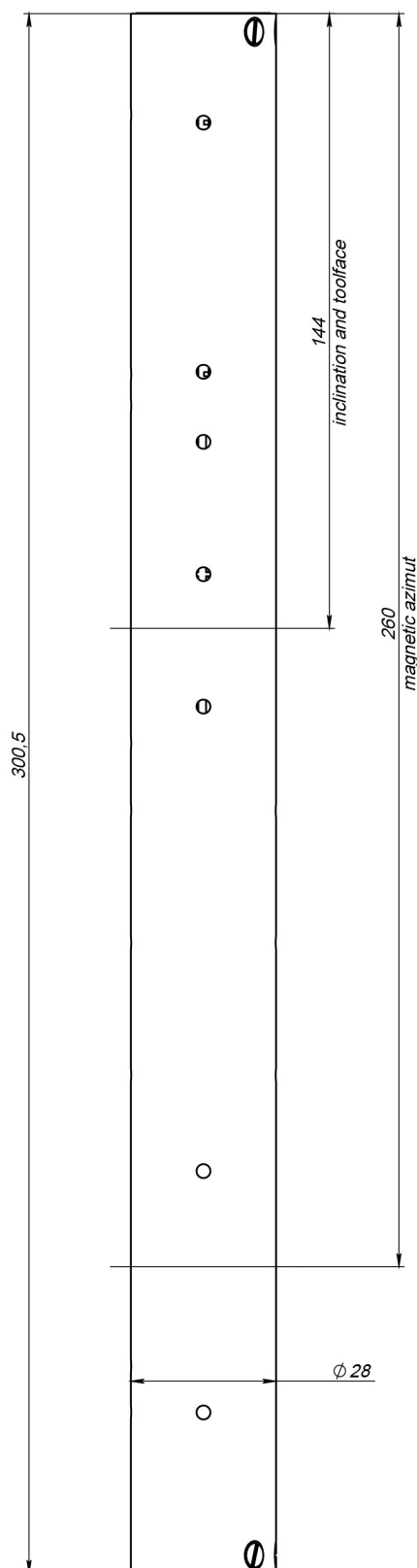
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Assembling two modules

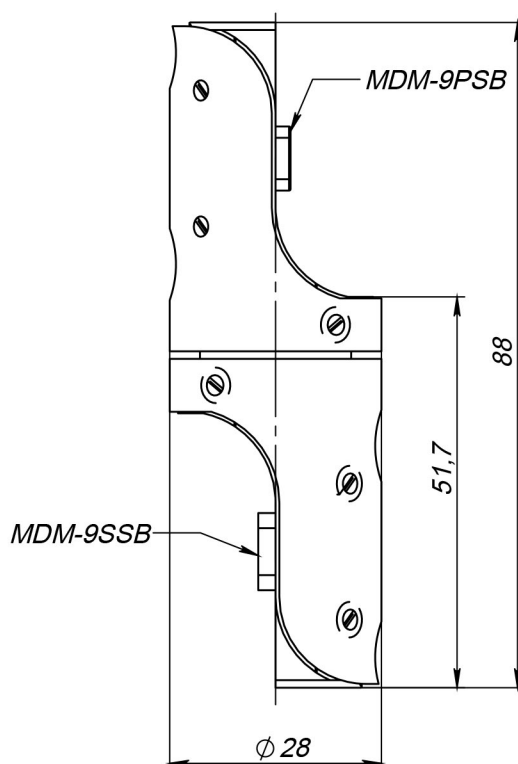
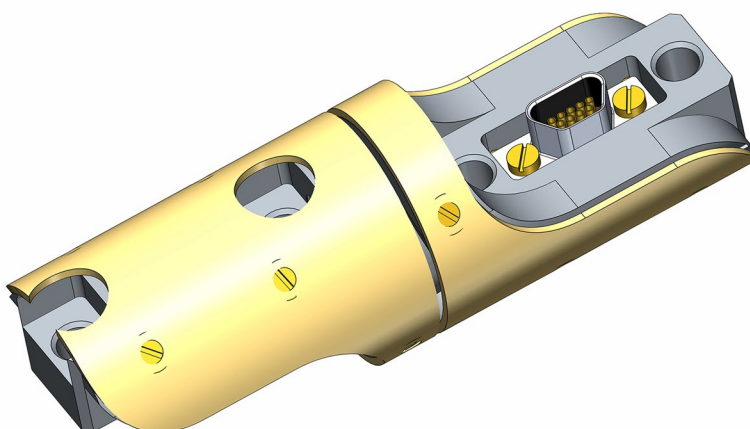


Housing type2:



Additional equipment

Flexible Coupling – serves as a connecting element between measurement modules. It provides elastic mobility along three axes within a range of 2.2 degrees. This allows for the relief of mechanical stress between connected measurement modules caused by manufacturing inaccuracies in mechanical processing. For electrical connection, it is equipped with two 9-pin MDM-type connectors.





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How to Order:

MELDOR-01-01

Housing type1 - 01

Housing type2 - 02

Flexible Coupling - 01

Without Flexible Coupling - 00