

**Reliable. Safe. Cost Effective.**  
Electronic Differential Pressure  
for Level Measurement  
Deltabar FMD72

Pressure



# Imagine Impulse Line and Capillary Free Multivariable Level Measurement:

## Eliminate mechanical issues with Endress+Hauser's new Electronic Differential Pressure Systems

Differential Pressure measurement is often used to measure the level in pressurized and vacuum tanks. Traditional differential pressure measurement using impulse lines and capillaries have issues that can lead to less accuracy, process safety risks and greater total cost of ownership. This can be especially true in tall distillation towers or other vessels with varying ambient temperatures.

### Disadvantages of Impulse Lines



- Icing up
- Clogging
- Leaky tabs
- Dry/wet leg inconsistencies

### Disadvantages of Capillaries



- Temperature effect

## Reliable.

- Eliminate measurement drift due to ambient temperature changes - up to 95%
- Differential pressure, head pressure and sensor temperature from one system - available via HART®
- Continuous health indication of the entire system via HART® diagnostics
- Faster response time than traditional capillary systems - up to 10 times faster!
- Standard cabling connections provide flexibility

## Safe.

- Eliminate tubing and connection leaks often seen with traditional systems
- Eliminate line condensation or evaporation events (dry/wet leg inconsistencies) and plugging events
- Reduce field personnel safety exposure risks

## Cost Effective.

- Use existing wiring when installing replacement systems
- No system recalibration or reconfiguration required with any component change
- Water tight, quick disconnect between sensors
- Fewer spare parts – replace individual components of the system as needed
- No need for varying lengths of capillary systems
- Use industry standard cable
- Just one technician to install entire system
- No need for freeze protection/heat tracing

# Electronic Differential Pressure for Level Measurement

The Deltabar FMD72 system uses proven pressure sensor technology in a new and innovative way. The system consists of just one transmitter and two sensor modules. One sensor module measures the hydrostatic level (high pressure) and the other one the head/blanket pressure (low pressure). The level is calculated out of these two values in the transmitter.

## Sensors

- Intuitive, menu-driven installation
- Screw terminals for easy connection
- Color coded wiring
- Ample space for installation
- NEMA 4x/6P (IP66/IP68) housing and cable
- Preconfigured at the factory with user defined settings
- Tether on sensor lids



## Cable

- Field adjustable cable
- Uses industry standard cable







#### Additional benefits

- Multivariable level measurement
  - differential and head/blanket pressure, as well as sensor temperature
- Easy product selection and sizing via Online Applicator software
- W@M - Life Cycle Management compliant

#### Technical data

- Loop powered, 4...20mA HART®
- Supports 12VDC powered installations
- Replace individual components of system as needed
- Seamless integration into existing systems
  - no need to change power supply or cable

#### Transmitter

- Performance independent of transmitter position
- Transmitter can be installed in convenient personnel safe area
- Local operation compliant with hazardous area classification (via external push buttons)

## Your Advantages at a Glance:

### Reliable.

New electronic differential pressure system eliminates traditional mechanical issues resulting in greater process availability and reliability.

### Safe.

Safety risks are minimized with the new electronic differential pressure system architecture and design.

### Cost Effective.

Lowest total cost of ownership due to reduced installation time, maintenance, downtime and spare requirements.

For more information:

[www.endress.com/electronic-dp/](http://www.endress.com/electronic-dp/)

# Select the optimal Technology for your Level Measurement

## Electronic dp level measurement

Accuracy:	single sensor $\pm 0.075\%$ system $\pm 0.1\%$
Option:	single sensor $\pm 0.05\%$ system $\pm 0.07\%$
Measuring range:	-400...400mbar to -1...10bar (-6...6psi to -15...150psi)
Process temperature:	-40...125°C (-40...257°F)



### Advantages

- Proven, established technology utilized in a new innovative way
- Quick & easy engineering
- One standard transmitter for level, differential pressure, pressure and sensor temperature
- Eliminate issues with mechanical differential pressure systems

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- Process temperatures  $> 125^{\circ}\text{C}$  ( $> 257^{\circ}\text{F}$ )
- Ratio level to head pressure  $> 1:6$

## Conventional dp level measurement

Accuracy (sensor element):	0.075%
Option (sensor element):	$\pm 0.05\%$
System depends on installation conditions	
Range:	-1...10bar (-15...150psi)
Process temperature:	40...350°C (-40...+660°F)



### Advantages

- Proven technology
- One standard transmitter for level, pressure and differential pressure

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- Large temperature fluctuations with long capillary systems and small process connections
- Mechanical issues with impulse lines

## Non-contact radar

Accuracy:	$< 10\text{m}$ : $\pm 3\text{mm}$ ( $< 32\text{ft}$ : $\pm 0.12''$ ), $> 10\text{m}$ : $\pm 0.03\%$ ( $> 32\text{ft}$ : $\pm 0.03\%$ )
Option:	$\pm 1\text{mm}$ ( $\pm 0.04''$ )
Measuring range:	0.3...70m (1...229ft)
Process temperature:	-60...400°C (-76...+752°F)



### Advantages

- Non contact measurement
- No influence by density variations
- Top or bypass mounted

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- Big obstacles in radar beam
- Heavy foam
- Dielectric constant  $< 1.4$

## Guided radar

Accuracy:	$< 15\text{m}$ : $\pm 2\text{mm}$ ( $< 49\text{ft}$ : $\pm 0.08''$ ) $> 15\text{m}$ : $\pm 10\text{mm}$ ( $> 49\text{ft}$ : $\pm 0.4''$ )
Measuring range:	0.2...45m (0.7...148ft)
Process temperature:	-196...450°C (-321...+842°F)



### Advantages

- No influence by density variations
- No influence by tank baffler
- Top or bypass mounted

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- Heavy build-up
- Dielectric constant  $< 1.4$
- Strong loads

# Endress+Hauser – Working with You Every Step of the Way



Endress+Hauser has the expertise, products, services and tools to support our customers from the time they identify a need for measurement and automation to the maintenance of the resulting solution. Endress+Hauser has served its customers with innovation for more than 50 years. And, during that time, Endress+Hauser has accumulated a vast knowledge of process applications.

With that knowledge and experience we help you:

- Choose the best sensing technology for your applications using state of the art instrumentation with ever-increasing diagnostic information availability
- Manage your project timeline and budget
- Design your system architecture
- Plan the fieldbus network that best suits your plant and its topology
- Procure products in the most convenient, cost-effective way
- Maintain and operate your plant by providing configuration tools, training, calibration, startup services and more – customized to your needs

We are where you are with our network of sales and service personnel to support your needs – every step of the way.

[www.addresses.endress.com](http://www.addresses.endress.com)