

# Bolt-on Weighing Cell Microcell®

## Application/Specified usage

- Extremely long-lasting, reliable and compact **bolt-on strain gauge sensors** for all types of vessels with a leg support structure and skirted silos
- Level control through dynamic, continuous and accurate weight measurement
- The technology avoids measurement inaccuracies caused by the angle of repose, rat-holing, bridging, moisture content, compaction etc.
- Integrated strain gauges transmit stress changes in the metal caused by any fluctuations in the container contents, as a measuring signal to the control system
- With a fatigue life of > 20 million measuring cycles, high shock resistance, and weather insensitivity, Microcell® is virtually "indestructible" for almost all applications.

## Application Examples

- Precise inventory measuring systems for all types of single or multiple containers
- For vertical metal substructures or skirted silos
- For outdoor and indoor applications
- From 35 t total load (vessel plus contents)
- Mounting on structural profiles or skirts
- Retrofitting and calibration possible at any filling level

## Features

- Durable, reliable measurement: Kistler-Morse pioneered bolt-on technology for storage vessels and silos. This method is still the standard way of measuring load-induced strain for precise quantity measurement in bulk vessels in many markets
- Simple installation, even for retrofitting: Using the installation set and drilling template, the sensors are simply bolted to the structural supports or skirts and connected to the controller via a junction box. There is no need to empty, lift or modify the vessel
- Easy calibration: An empty vessel is not required. Precise calibration can take place at any fill level
- Easy to replace: If damaged due to e.g. mechanical impact, sensors can be easily replaced on-site
- Half-Bridge Strain Gauge Technology

## Options/Accessories

- ATEX Approval
- Junction boxes for up to 4 sensors
- Controllers for 1 to 120 vessels

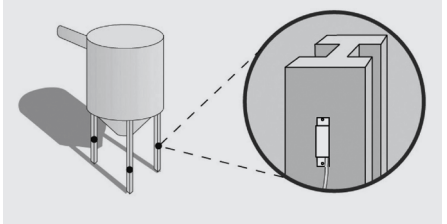
## Communication

 10...30 V DC

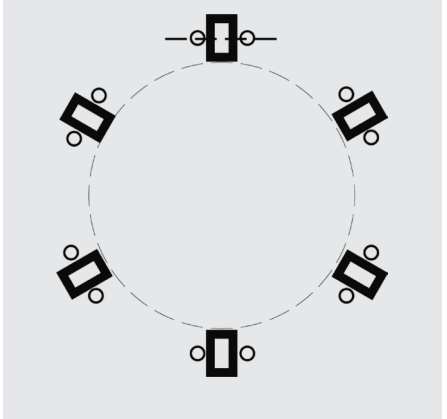
## Microcell®



## Typical Microcell installation on vertical vessel structures

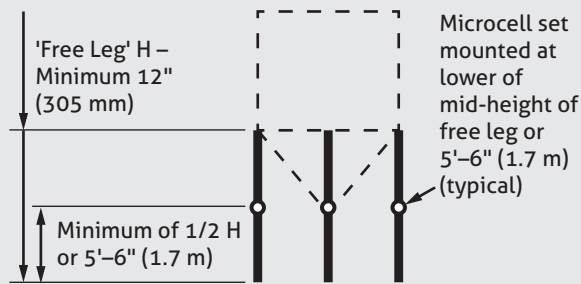


## Pairwise Microcell mounting arrangement on structural legs



Specification	
Excitation Voltage	12 ( $\pm 5\%$ )...30 VDC
Excitation Current	12 V: 4.0 mA at -18 °C (0 °F) to 2.7 mA at 30 °C (100 °F)
Strain Gauge to Sensor	
Frame Breakdown Voltage	> 250 VDC
Red to White & Black to White	3" Microcell Standardized: 8.50 K $\pm$ 850 $\Omega$ at 21 °C (70 °F)
Resistance	3" Microcell Non-Standardized: 2.0 K $\pm$ 200 $\Omega$ at 21 °C (70 °F) 2" Microcell 2.0 K $\pm$ 200 $\Omega$ at 21 °C (70 °F)
Stress Level	3" Microcell: Maximum: $\pm$ 10,000 psi (7.0 kg/mm <sup>2</sup> ), Recommended: 5,000 $\pm$ 2,500 psi (3.5 $\pm$ 1.5 kg/mm <sup>2</sup> ) 2" Microcell: Maximum: $\pm$ 15,000 psi (10.5 kg/mm <sup>2</sup> ), Recommended: 7,500 $\pm$ 3,750 psi (5.3 $\pm$ 2.6 kg/mm <sup>2</sup> )
Fatigue Life	> 20 million cycles; load & unload at 0 to 5,000 psi (0 to 3.5 kg/mm <sup>2</sup> )
Output Sensitivity on Carbon Steel (12 V Excitation)	3" Microcell: 70 mV $\pm$ 1 %/0.7 kg/mm <sup>2</sup> (70 mV $\pm$ 1 %/1,000 psi)
Zero Strain Output	2" Microcell: 56 mV $\pm$ 1 %/0.7 kg/mm <sup>2</sup> (56 mV $\pm$ 1 %/1,000 psi) 0 mV $\pm$ 100 mV
Output Impedance and Temperature Effects	3" Microcell Standardized: 7.50K $\pm$ 75 $\Omega$ at 21 °C (70 °F) 3" Microcell Non-Standardized: 1000 $\Omega$ $\pm$ 100 $\Omega$ at 21 °C (70 °F) 2" Microcell: 1000 $\Omega$ $\pm$ 100 $\Omega$ at 21 °C (70 °F)
Sensitivity Change	0.036 % per degree C (0.02 % per degree F) over the compensated range
Zero Shift	$\pm$ 5 mV/56 °C ( $\pm$ 5 mV/100 °F) in compensated temperature range
Operational Temperature range	-34...66 °C (-30...150 °F)
Storage Temperature range	-34...66 °C (-30...150 °F)
Compensated Temperature range	Standard -18...38 °C (0...100 °F) / other ranges: contact Anderson-Negele
Cable	3-conductor, 22 gauge, unshielded (15" (4.6 m))
Authorizations	ATEX (optional, system approval requires Stainless Steel Junction Box JB-S-S1 or JB-S-S2)

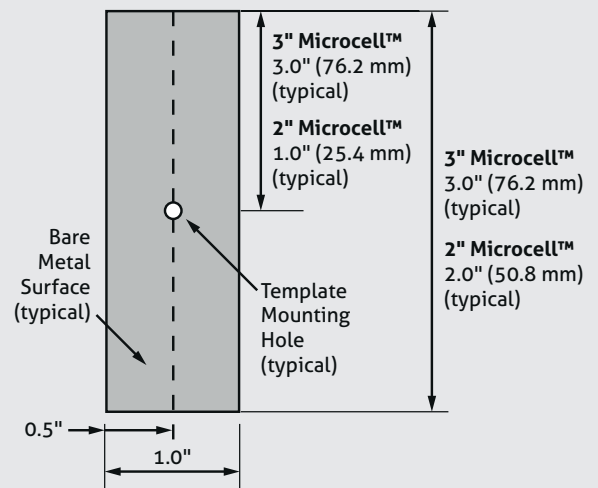
## Microcell Installation Location



## Note:

For leg structures with X-shape supports or horizontal beams please contact Anderson-Negele

## Microcell Installation Space Requirement



## Transport/Storage



- Do not store outside
- Store in an area that is dry and dust-free
- Do not expose to corrosive media
- Protect against solar radiation
- Avoid mechanical shock and vibration
- Storage temperature -34...66 °C (-30...150 °F)
- Relative humidity max. 98 %

## Cleaning/Maintenance



- When using a pressure washer, do not point the nozzle directly at the electrical connections.

## Reshipment



- Sensors shall be clean and free of media or heat-conductive paste and must not be contaminated with dangerous media!
- Use suitable transport packaging only to avoid damage of the equipment!

## Conventional usage



- Not suitable for applications in safety-relevant system parts (SIL).

## Standards and guidelines



- Compliance with the applicable regulations and directives is mandatory.

## Note on CE



- Applicable directives: Electromagnetic Compatibility Directive 2014/30/EU
- Compliance with the applicable EU directives is identified by the CE label on the product.
- The operating company is responsible for complying with the guidelines applicable to the entire installation.

## Disposal



- Electrical devices should not be disposed of with household trash. They must be recycled in accordance with national laws and regulations.
- Take the device directly to a specialized recycling company and do not use municipal collection points.

## Order Code

MC	Microcell				
	<b>Sensor Size</b>				
	3	3 inch (76 mm)			
	2	2 inch (51 mm)			
		<b>Sensor Type</b>			
		S	Standardized (only Sensor Type 3)		
		N	Non-Standardized (only Sensor Type 2)		
		A	Standardized with ATEX Approval (only Sensor Type 3, only with stainless steel junction box)		
		X	Non-Standardized with ATEX Approval (only Sensor Type 2, only with stainless steel junction box)		
			<b>Vessel Material</b>		
			X	Carbon Steel	
			A	Aluminium	
			S	Stainless Steel	
				<b>Cover Shape</b>	
				N	No Cover
				F	Flat Cover
				S	Small Diameter Curved Cover (8 to 16 cm)
				L	Large Diameter Curved Cover > 16 cm (6")
					<b>Cable</b>
				015	4,6 m (15 ft.) of Cable
				---	Custom Length (in meter, 5...152 (15...500))
MC	3	S	X	N	080

## Accessories

One cable 3-conductor, unshielded, is supplied with each Microcell

## Junction Boxes for vertical Microcell

JB-S-P1	Half Bridge, Plastic, 1 hole entry
JB-S-P2	Half Bridge, Plastic, 2 hole entry
JB-S-A4	Half Bridge, Aluminium, 4 hole entry
JB-S-S1	Half Bridge, Stainless Steel, 1 hole entry
JB-S-S2	Half Bridge, Stainless Steel, 2 hole entry

## Junction Box (various models)

