

MCW WALKER SENSORS



Pediatric Anterior Walker Sensor

DESCRIPTION

AMTI's MCW-PA, PP, and AA walker sensors are specifically designed for the precise measurement of the forces and moments transmitted through walkers. Offered in three walker styles, the sensors measure the three orthogonal force components along the X, Y, and Z axes, and the moments about the axes, producing a total of six outputs. The body of the load cells are manufactured from a high strength aluminum alloy, and a durable anodized finish protects the exterior. The characteristics of these strain gage sensors make them ideal for research and testing environments; they have high stiffness, high sensitivity, low cross-talk, excellent repeatability, and long term stability. They are simple, easy to use, and are available in pediatric anterior, pediatric posterior, and adult anterior walker styles, in either 250, 500, or 1000 pound (1112, 2225, or 4450 Newton) vertical capacities. The sensor mounting hardware has been designed for use with KAYE™ posterior walkers, and anterior walkers produced by Guardian™. Other walker versions are available on request.



AMPLIFICATION

The MCW walker sensors incorporate strain gages mounted on strain elements to measure forces and moments. As with most conventional strain gage transducers, bridge excitation and signal amplification are required. AMTI's SGA or MCA amplifiers are high gain devices which provide excitation and amplification for multiple channels in one convenient package. The rack mountable MCA-6, or the desktop SGA6-4 provide the six channels of amplification required by the sensor. These amplifiers process the sensor's low-level signals and provide outputs suitable for an A/D converter so that the data can be stored and processed by a computer.



Pediatric Posterior Walker Sensor



Adult Anterior Walker Sensor

APPLICATIONS

These devices were developed to examine the forces and moments involved with tasks involving walkers. Applications include biomechanics, engineering, medical research, orthopedics, rehabilitation evaluation, and prosthetics. Specific uses include gait analysis, stability analysis, neurological analysis, prosthetics fitting, force, power, and work studies.



CALIBRATION

Each sensor is inspected and tested at AMTI's calibration facility. The calibration procedure provides a detailed sensitivity matrix and a complete test of all system components, including the amplifier and the connecting cable if ordered together.

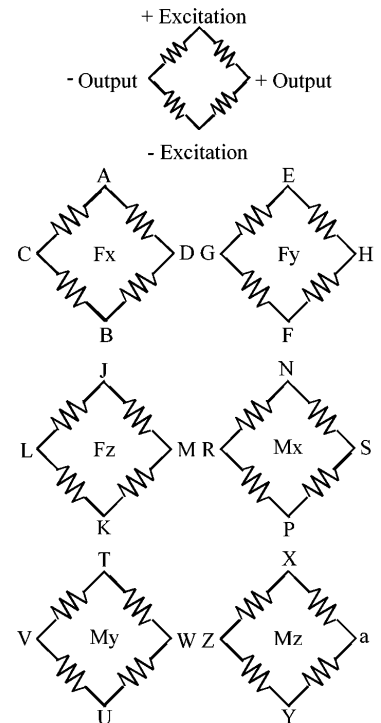
ISO 9001 CERTIFIED

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MCW WALKER SENSORS

MCW SERIES SPECIFICATIONS	250	500	1000
Fx, Fy Capacity, lb, (N)	125 (550)	250 (1100)	500 (2200)
Fz Capacity, lb, (N)	250 (1100)	500 (2200)	1000 (4400)
Mx, My Capacity, in*lb, (Nm)	250 (28)	500 (56)	1000 (112)
Mz Capacity, in*lb, (Nm)	125 (14)	250 (28)	500 (56)
Fx,y Sensitivity, $\mu\text{V}/[\text{V}\cdot\text{lb}]$, ($\mu\text{V}/[\text{V}\cdot\text{N}]$)	12.0 (2.7)	6.0 (1.35)	3.0 (0.65)
Fz Sensitivity, $\mu\text{V}/[\text{V}\cdot\text{lb}]$, ($\mu\text{V}/[\text{V}\cdot\text{N}]$)	3.0 (0.67)	1.5 (0.34)	0.75 (0.17)
Mx, My Sensitivity, $\mu\text{V}/[\text{V}\cdot\text{in}\cdot\text{lb}]$, ($\mu\text{V}/[\text{V}\cdot\text{N}\cdot\text{m}]$)	15 (132)	7.5 (66)	3.7 (33)
Mz Sensitivity, $\mu\text{V}/[\text{V}\cdot\text{in}\cdot\text{lb}]$, ($\mu\text{V}/[\text{V}\cdot\text{N}\cdot\text{m}]$)	12.0 (97.4)	6.0 (50.4)	3.0 (26.5)
Fx,y Stiffness, $\text{X}10^5 \text{ lb/in}$, ($\text{X}10^7 \text{ N/m}$)	0.3 (0.5)	0.6 (1.0)	1.2 (2.0)
Fz Stiffness, $\text{X}10^5 \text{ lb/in}$, ($\text{X}10^7 \text{ N/m}$)	4.5 (8.0)	9.0 (16.0)	18.0 (32.0)
Mz Stiffness, $\text{X}10^4 \text{ in}\cdot\text{lb/radian}$, ($\text{X}10^4 \text{ N}\cdot\text{m/radian}$)	5.0 (0.5)	10 (1.1)	20 (2.2)

WIRING FOR MCW SENSORS



Bridge Fz = 700 ohms
Bridges Fx; Fy; Mx; My; Mz = 350 ohms

GENERAL SPECIFICATIONS

Weight: 1.3 lb (0.59 kg)

Recommended Excitation: 10V or less

Crosstalk: Less than 2% on all channels

Temperature Range: 0 to 125°F,
(-17 to 52°C)

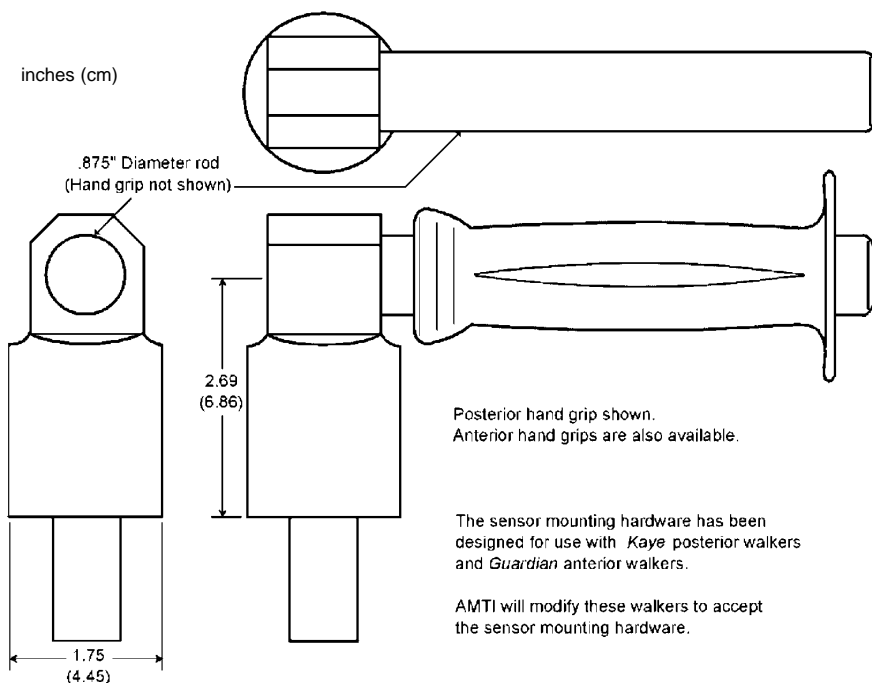
Fx, Fy, Fz hysteresis: $\pm 0.2\%$ Full Scale
Output

Fx, Fy, Fz non-linearity: $\pm 0.2\%$ Full
Scale Output

ISO 9001 CERTIFIED

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