

Title (en)  
6 DOF GRAPHIC CONTROLLERS WITH SHEET CONNECTED SENSORS

Title (de)  
SECHS FREIHEITSGRADEN GRAFIK-STEUERGERÄT MIT FOLIEVERBUNDENEN SENSOREN

Title (fr)  
UNITES COMMANDE GRAPHIQUES A 6 DEGRE DE LIBERTE (DDL) POURVUES DE CAPTEURS RELIES PAR FEUILLES

Publication  
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Application  
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Priority  
US 9928913 W 19991206

Abstract (en)  
[origin: WO0141053A1] A sensor connecting sheet material for inclusion in appropriately structured multiple-axes controllers comprised of a single input member operable in 6 DOF relative to a reference member of the controller. The input member having return-to-center resiliency relative to the reference member on at least the three perpendicular linear axes. The input member can be of a continuously rotatable trackball-type or a limited rotation joystick-type, and the reference member can be a shaft, a base or a housing. The controllers include carriage structuring for influencing sheet connected sensors by hand-applied operation of the input member. The preferred structures provide cooperative interaction with movement or force influenced sensors in primarily a single area. Some, most, or all of the sensors are preferably supported on a generally single plane, such as on a printed flexible membrane sensor sheet or circuit board sheet. In an alternative embodiment, sensors and conductive traces are applied on a generally flat, flexible membrane sensor sheet, which is then bent into a three dimensional configuration which may in some cases reach a widely-spread 3-D constellation of 6 DOF and/or other sensor mountings. The use of sensors connected by a sheet member, whether finally applied in a flat or 3-D configuration, enables efficient circuit and sensor connection and placement during manufacture, resulting in low product costs and high reliability.

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