



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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| <b>(51) International Patent Classification <sup>6</sup>:</b><br><b>H01R 23/68</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>A2</b>                    | <b>(11) International Publication Number:</b> <b>WO 99/56352</b><br><b>(43) International Publication Date:</b> 4 November 1999 (04.11.99) |                          |    |            |                              |    |            |                          |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p><b>(21) International Application Number:</b> PCT/US99/09163</p> <p><b>(22) International Filing Date:</b> 28 April 1999 (28.04.99)</p> <p><b>(30) Priority Data:</b></p> <table border="0"> <tr> <td>60/083,488</td> <td>29 April 1998 (29.04.98)</td> <td>US</td> </tr> <tr> <td>60/101,626</td> <td>23 September 1998 (23.09.98)</td> <td>US</td> </tr> <tr> <td>09/295,344</td> <td>21 April 1999 (21.04.99)</td> <td>US</td> </tr> </table> <p><b>(71) Applicant:</b> LITTON SYSTEMS, INC. [US/US]; 400 Park Road, Watertown, CT 06795 (US).</p> <p><b>(72) Inventors:</b> BRADLEY, Robert, M.; 64 Orient Street, Oakville, CT 06779 (US). PERUGINI, Michael, N.; 40 Glen Hollow Drive, Monroe, CT 06468 (US).</p> <p><b>(74) Agent:</b> BERNER, Kenneth, M.; Lowe Hauptman Gopstein Gilman &amp; Berner, LLP, Suite 310, 1700 Diagonal Road, Alexandria, VA 22314 (US).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                              | 60/083,488                                                                                                                                 | 29 April 1998 (29.04.98) | US | 60/101,626 | 23 September 1998 (23.09.98) | US | 09/295,344 | 21 April 1999 (21.04.99) | US | <p><b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b><br/> <i>Without international search report and to be republished upon receipt of that report.</i></p> |
| 60/083,488                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 29 April 1998 (29.04.98)     | US                                                                                                                                         |                          |    |            |                              |    |            |                          |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 60/101,626                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 23 September 1998 (23.09.98) | US                                                                                                                                         |                          |    |            |                              |    |            |                          |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 09/295,344                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 21 April 1999 (21.04.99)     | US                                                                                                                                         |                          |    |            |                              |    |            |                          |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p><b>(54) Title:</b> HIGH DENSITY ELECTRICAL INTERCONNECT SYSTEM HAVING ENHANCED GROUNDING AND CROSS-TALK REDUCTION CAPABILITY</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                              |                                                                                                                                            |                          |    |            |                              |    |            |                          |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p><b>(57) Abstract</b></p> <p>Disclosed is an electrical interconnect system using multiple grounding methods to reduce or prevent spurious signals from interfering with high density contacts carrying high speed transmissions. A first connector includes an insulative pillar partially surrounded by a plurality of signal contacts. A ground contact is at least partially located within the insulative pillar. A second connector includes a corresponding plurality of flexible signal contacts for mating with the signal contacts adjacent the insulative pillar. The second connector also includes a ground contact for receiving the ground contact of the first connector. The ground contacts provide a first method of providing a ground path to reduce spurious signals from entering the signal path. An electrically conduction shield is located outside the signal contacts when the first and the second connectors are mated. The first connector includes a member which provides a ground path between the first connector and the electrically conducting shield. Advantageously, the electrical interconnect system has two grounding methods which are particularly important in a high density electrical interconnect system where the contacts are closely spaced and susceptible to noise and other spurious signals.</p> <div data-bbox="758 1220 1476 2072" data-label="Image"> </div> |                              |                                                                                                                                            |                          |    |            |                              |    |            |                          |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |