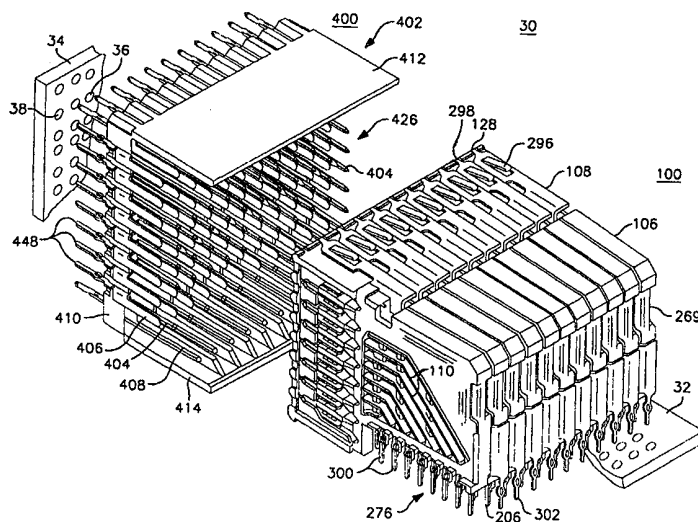




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁷ : H01R 12/16, 12/34, 13/447, 43/20</p>	<p>A3</p>	<p>(11) International Publication Number: WO 00/10233</p> <p>(43) International Publication Date: 24 February 2000 (24.02.00)</p>
<p>(21) International Application Number: PCT/US99/18359</p> <p>(22) International Filing Date: 12 August 1999 (12.08.99)</p> <p>(30) Priority Data: 60/096,219 12 August 1998 (12.08.98) US 60/105,835 16 October 1998 (16.10.98) US</p> <p>(71) Applicant: ROBINSON NUGENT, INC. [US/US]; 800 East Eighth Street, New Albany, IN 47150 (US).</p> <p>(72) Inventors: RAMEY, Samuel, C.; 1906 Lauderdale Road, Louisville, KY 40205 (US). MEREDITH, Kevin, R.; 2500 Bradley Avenue, Louisville, KY 40217 (US). BARR, Alexander, W.; 1203 Hogarth Drive, Louisville, KY 40222 (US). KUSTERS, Johannes, Petrus, Maria; 3226 Slate Creek Court #1, New Albany, IN 47150 (US).</p> <p>(74) Agent: NIEDNAGEL, Timothy, E.; Barnes & Thornburg, 11 South Meridian Street, Indianapolis, IN 46204 (US).</p>	<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, 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>Published <i>With international search report.</i></p> <p>(88) Date of publication of the international search report: 5 October 2000 (05.10.00)</p>	

(54) Title: CONNECTOR APPARATUS



(57) Abstract

A socket connector (100) includes a plurality of connector modules (106) configured for insertion into a socket housing (102). Each connector module (106) is formed to include a plurality of laterally extending passageways (230) which are interleaved with a plurality of conductive paths (202) therein. A plurality of vertical shields (108) are configured for insertion into the socket housing (102). Each vertical shield (108), extending along a first side (232) of a connector module (106), is formed to include a plurality of laterally extending passageways (270) in substantial alignment with the passageways (230) in the connector modules (106). A plurality of horizontal tailshields (110) are configured for insertion into the plurality of laterally extending passageways (230, 270) in the connector modules (106) and the first shields (108). The horizontal tailshields (110) are electrically coupled to the vertical shields (108) to form a coaxial shield around each conductive path (202).

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/18359

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01R12/16 H01R12/34 H01R13/447 H01R43/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01R H05K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 226 499 A (BAUERLE GERHARD) 7 October 1980 (1980-10-07)	40,41
A	the whole document ---	42-44
X	WO 98 19370 A (KIMURA TAKAO ; WHITAKER CORP (US)) 7 May 1998 (1998-05-07)	40,41
A	page 4, paragraph 4 -page 7, paragraph 7 ---	42
X	US 5 281 161 A (KANAI HIROSUMI) 25 January 1994 (1994-01-25)	40,41
A	the whole document ---	43
A	US 5 518 422 A (ZELL KARL ET AL) 21 May 1996 (1996-05-21)	1, 31, 38, 39, 46, 47
	the whole document ---	
	-/--	

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

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Date of the actual completion of the international search

25 February 2000

Date of mailing of the international search report

16.03.00

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INTERNATIONAL SEARCH REPORT

International Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 296 10 780 U (SIEMENS AG) 29 August 1996 (1996-08-29) the whole document ---	1, 31, 38, 39, 46, 47
A	US 5 282 752 A (DOUTRICH RAY C ET AL) 1 February 1994 (1994-02-01) column 4, line 63 - line 68 ---	40, 41, 43
A	WO 94 16477 A (BERG TECH INC ; ANDREWS DEREK (NL)) 21 July 1994 (1994-07-21) the whole document ---	24, 45
A	EP 0 746 060 A (WHITAKER CORP) 4 December 1996 (1996-12-04) -----	

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 99/ 18359

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. CLAIMS: 1-23, 24-30, 31-37, 38, 39, 45, 46-48
2. CLAIMS: 40-44

FOR FURTHER INFORMATION PLEASE SEE FORM PCT/ISA/206 MAILED 03.12.99.

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-23,24-30,31-37,38,39,45,46-48

Claims 1-23,31-37,38,39,46-48:

A connector housing having connector modules and first and second shields, the purpose of which is to form a coaxial shield around each contact to prevent crosstalk and to achieve a specified impedance.

Claims 24-30,45:

A header, pluggable to the connector housing, having contact pins and shield blades that form a coaxial shielding around each contact.

2. Claims: 40-44

A protective cap that protects the pins during shipping and handling of the connector header portion.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/18359

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