



US004686506C1

(12) **EX PARTE REEXAMINATION CERTIFICATE** (5194th)
United States Patent
Farago

(10) **Number:** **US 4,686,506 C1**

(45) **Certificate Issued:** **Sep. 6, 2005**

(54) **MULTIPLE CONNECTOR INTERFACE**

WO WO86-03914 * 7/1986

(75) **Inventor:** **Steven Farago**, Mount Kisco, NY (US)

OTHER PUBLICATIONS

(73) **Assignee:** **Acticon Technologies LLC**, Monsey, NY (US)

Whittaker, "A mass-termination, filtered connector for RS232-C circuits", Thirteenth Annual Connector Symposium Proceeding 1980, pp. 197-204.*

Hodgetts, "A Shieleded Computer Interface connector", Fourteenth Annual Connector Symposium Proceedings, 1981, pp. 113-118.*

Rowe, "Give your Computeran RS-232C interface", Electronics Australia, vol. 41, No. 9, pp. 81, 83, 84, 139.*

Reexamination Request:

No. 90/006,858, Nov. 10, 2003

Reexamination Certificate for:

Patent No.: **4,686,506**
Issued: **Aug. 11, 1987**
Appl. No.: **06/891,190**
Filed: **Jul. 28, 1986**

(Continued)

Related U.S. Application Data

(63) Continuation-in-part of application No. 06/484,823, filed on Apr. 13, 1983, now Pat. No. 4,603,320.

(51) **Int. Cl.⁷** **H03M 9/00**

(52) **U.S. Cl.** **341/100; 361/394; 439/620**

(58) **Field of Search** **341/100, 101; 439/389, 391, 393, 620, 621, 622**

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,327,174	A	*	6/1967	Barre et al.	.....	361/744
3,395,400	A	*	7/1968	De Witt et al.	.....	341/100
3,406,368	A	*	10/1968	Curran	.....	439/79
3,408,612	A	*	10/1968	Bute et al.	.....	439/68
3,437,882	A	*	4/1969	Cayzer	.....	361/791
3,573,799	A	*	4/1971	Drinnan et al.	.....	341/81

(Continued)

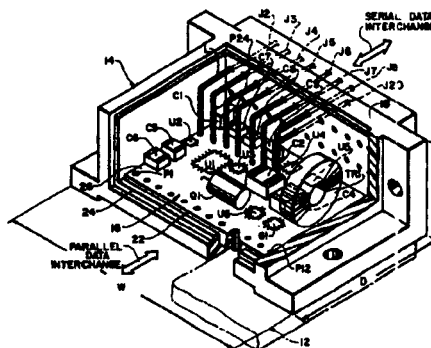
FOREIGN PATENT DOCUMENTS

EP	0157113	A2	*	10/1985	.....	H04L/25/24
GB	2130025	A	*	5/1984	.....	H01R/9/09
GB	2130818	A	*	6/1984	.....	H01R/23/66
JP	56061856	A	*	5/1981	.....	H04L/11/00
JP	57087255	A	*	5/1982	.....	H04L/11/00
JP	58047352	A	*	3/1983	.....	H04L/13/00
JP	59157738	A	*	9/1984	.....	G06F/3/00
JP	60110059	A	*	6/1985	.....	G06F/13/00

Primary Examiner—Howard L. Williams
(74) *Attorney, Agent, or Firm*—Paul J. Lerner

(57) **ABSTRACT**

A connector interface for enabling multiple conversions between first and second data handling systems wherein the data in the first system is arranged in a first type of format and the data in the second system is arranged in a second type of format, includes a connector housing with first and second sets of electrical contact elements exposed at different portions of the housing. Circuitry contained entirely within the housing operates to convert data transmitted to the first set of contact elements from the first data handling system into corresponding data in the second type of format for transmission to the second data handling system through the second set of contact elements, and to convert data transmitted to the second set of contact elements from the second data handling system into corresponding data in the first format for transmission to the first data handling system. One set of electrical contact elements may, for example, be arranged to extend out from the connector housing in two parallel rows to allow the elements to be directly connected to corresponding terminals arranged in a dual in line configuration on an outside printed circuit board. The other set of electrical contact elements may be arranged for multiple simultaneous or selective output connections for applications such as multiple communication, digital to analog and analog to digital conversions, and a multiple floppy disk controller.



U.S. PATENT DOCUMENTS

3,643,135	A	*	2/1972	Devore et al.	361/730
3,646,573	A	*	2/1972	Holmes, Jr.	178/4.1 R
3,790,858	A	*	2/1974	Brancaleone et al.	174/260
3,863,226	A	*	1/1975	Ryburn	710/71
3,903,404	A	*	9/1975	Beall et al.	361/687
3,946,379	A	*	3/1976	Lippman	341/100
3,997,879	A	*	12/1976	Markley et al.	714/24
4,023,144	A	*	5/1977	Koenig	710/71
4,024,505	A	*	5/1977	Sperling	710/2
4,031,371	A	*	6/1977	DeVries	361/686
4,034,346	A	*	7/1977	Hostein	710/106
4,038,642	A	*	7/1977	Bouknecht et al.	710/20
4,048,673	A	*	9/1977	Hendrie et al.	710/305
4,053,950	A	*	10/1977	Bourke et al.	710/22
4,054,947	A	*	10/1977	Shanks et al.	710/16
4,065,662	A	*	12/1977	Garczynski et al.	235/419
4,079,372	A	*	3/1978	Koenig	341/100
4,115,849	A	*	9/1978	Johnson et al.	370/464
4,115,856	A	*	9/1978	Labeye-Voisin et al.	710/106
4,124,888	A	*	11/1978	Washburn	710/8
4,124,889	A	*	11/1978	Kaufman et al.	710/2
4,127,896	A	*	11/1978	Raslavsky, III	703/26
4,137,559	A	*	1/1979	Reuting	361/735
4,150,438	A	*	4/1979	Dorey et al.	710/105
4,152,750	A	*	5/1979	Bremenour et al.	361/686
4,206,962	A	*	6/1980	Shue et al.	439/620
4,217,624	A	*	8/1980	Tuck	361/686
4,242,721	A	*	12/1980	Krolak et al.	361/686
4,245,300	A	*	1/1981	Kaufman et al.	710/1
4,246,637	A	*	1/1981	Brown et al.	710/62
4,250,407	A	*	2/1981	Dorey et al.	326/47
4,250,563	A	*	2/1981	Struger	710/63
4,253,143	A	*	2/1981	Onodera et al.	708/108
4,253,146	A	*	2/1981	Bellamy et al.	709/226
4,254,462	A	*	3/1981	Raymond et al.	710/63
4,261,035	A	*	4/1981	Raymond	709/236
4,275,455	A	*	6/1981	Bartlett	700/1
4,277,646	A	*	7/1981	Sams	379/93.05
4,293,924	A	*	10/1981	Struger et al.	710/14
4,309,754	A	*	1/1982	Dinwiddie, Jr.	710/307
4,315,308	A	*	2/1982	Jackson	710/33
4,328,484	A	*	5/1982	Denecke	341/64
4,333,696	A	*	6/1982	O'Neill et al.	439/61
4,348,636	A	*	9/1982	Doundoulakis	714/46
4,350,973	A	*	9/1982	Petryk, Jr.	398/202
4,354,268	A	*	10/1982	Michel et al.	714/724
4,361,955	A	*	12/1982	Lancaster	29/884
4,367,374	A	*	1/1983	Serrano	379/442
4,375,103	A	*	2/1983	Armeth et al.	375/358
4,395,610	A	*	7/1983	Downs et al.	200/292
4,398,780	A	*	8/1983	Novotny et al.	439/284
4,401,351	A	*	8/1983	Record	439/61
4,403,111	A	*	9/1983	Kelly	178/69 R
4,404,651	A	*	9/1983	Grudowski	710/19
4,409,587	A	*	10/1983	Scott	341/97
4,426,166	A	*	1/1984	Bowling	400/62
4,428,043	A	*	1/1984	Catiller et al.	709/250
4,428,044	A	*	1/1984	Liron	714/12
4,432,604	A	*	2/1984	Schwab	385/60
4,434,472	A	*	2/1984	Kachun	345/565
4,443,850	A	*	4/1984	Harris	710/23
4,443,865	A	*	4/1984	Schultz et al.	712/242
4,443,884	A	*	4/1984	Swarz	375/377
4,445,213	A	*	4/1984	Baugh et al.	370/405
4,445,215	A	*	4/1984	Svendson	370/517
4,447,804	A	*	5/1984	Allen	341/100
4,451,884	A	*	5/1984	Heath et al.	710/24
4,463,421	A	*	7/1984	Laws	710/46
4,477,862	A	*	10/1984	Gonzales	361/686
4,480,885	A	*	11/1984	Coppelman	439/159
4,489,419	A	*	12/1984	Wang	375/257
4,490,775	A	*	12/1984	Quan	361/686
4,493,028	A	*	1/1985	Heath	710/1
4,498,716	A	*	2/1985	Ward	439/55
4,509,113	A	*	4/1985	Heath	710/66
4,514,823	A	*	4/1985	Mendelson et al.	710/2
4,516,173	A	*	5/1985	Abe et al.	382/245
4,525,802	A	*	7/1985	Hackamack	361/683
4,534,011	A	*	8/1985	Andrews et al.	710/58
4,543,450	A	*	9/1985	Brandt	379/93.05
4,556,953	A	*	12/1985	Caprio et al.	710/301
4,571,456	A	*	2/1986	Paulsen et al.	379/457
4,597,631	A	*	7/1986	Flores	385/53
4,607,170	A	*	8/1986	Wickman	307/147

OTHER PUBLICATIONS

Author Unknown, "Modem Survey", Datamation, vol. 25, No. 3, pp. 167-226.*

Goldman, "Modems-Integral Approach Gains Momentum," Data Communications User, Dec. 1975, p. 31.*

Hewlett-Packard Inc., "Operating Note Model 15104A 15115A 15116A", 1982.*

Magga, "110 baud serial interface," New Electronics, vol. 18 No. 18 p. 29, 1985.*

Austerlitz H., "A parallel-to-serial printer port adapter," BYTE magazine, vol. 10 No. 9, pp. 257-260, Sep. 1985.*

Polecat, H., "Universal VDU interface," Electronic Product Design, vol. 2 No. 2, Feb. 1981, p. 23.*

Commodore Business Machines, Inc. "VIC-20 The friendly computer VICMODEM," 1982.*

Smith, A.E., "You Can Take It With You," Business Computer Systems, vol. 1, No. 1, Sep. 1981, pp. 94-99.*

Practical Electronics, "An RS232 to centronics converter," vol. 21, No. 9 pp. 46-49, Sep. 1985.*

Electronics, "Chips Inside Connector Cut Costs, Save Space," p. 25, Jan. 13, 1986.*

Clune, T.R., "Interfacing for data acquisition," BYTE vol. 10 No. 2 pp. 269-282, Feb. 1985.*

Gareb, R., "Low-cost parallel to serial converter," Electronics Australia, vol. 45, No. 7, pp. 96-99, Jul. 1983.*

Hardie, A et al., "Making a DIN about connections (S5/8 serial interface)," Computing, The Magazine, p. 23, Oct. 18, 1984.*

"Modems," Which Computer?, pp. 131-141, Author unknown, Publisher unknown, Sep. 1985.*

"Parallel to serial converter," Penfold, R.A., Practical Electronics, vol. 20, No. 9, pp. 17-20, Sep. 1984.*

"RS232/Centronics converter," Elektor, vol. 10, No. 10, pp. 58-63, Oct. 1984.*

"Serial to parallel—a flexible utility box," Wilcox, A.D., Dr. Dobb's Journal, vol. 8, No. 8 pp. 28-35, Aug. 1983.*

"Something Substantial: The Access Matrix Transportable Computer," Bassett, S.B., Small Business Computers Magazine, vol. 7, No. 4, pp. 42-45, Oct. 1983.*

"The Business Computer Network Corp has introduced the 'Network Inquirer,' a handheld computer that enables users to access hundreds of public databases . . . number," Magazine of Direct Marketing p. 1291, Nov. 1982.*

"The microcomputer RS232C interface system," Malcome-Lawes, D.J., Laboratory Microcomputer, vol. 3, No. 3, pp. 89-100, 198.*

"The modem for the house telephone," HC Mein Home Computer, No. 9, pp. 36-42, Sep. 1984.*

"The standard interface," Repko, M., Systems International, vol. 9, No. 6, pp. 40-42, Jun. 1981.*

"UART forms RS-232C/Centronics interface," Perianayagam, K.S., Kalyanaramudu, United Kingdom, EDN, vol. 30, No. 27, pp. 263-264, Dec. 12, 1985.*

"Universal RS232C cable," Vaidya, D.M., Microprocessors and Microsystems, vol. 9, No. 5, pp. 231-233, Jun. 1985.*

Radio Shack TRS-80 Color Computer Disk System Owner's Manual and Programming Guide, Copyright 1981.

Radio Shack TRS-80 Micro Computer System Expansion Interface Catalog No. 26-1140/1141/1142, Copyright 1979.

Hewlett Packard HP 82938A HP-IL Interface Owner's Manual Series 80, Jan. 1982.

Hewlett-Packard HP 82950A Modem Owner's Manual Series 80, Jan. 1982.

Photocopy of a photograph of the circuit board from a HP 82950 modem.

* cited by examiner

US 4,686,506 C1

1
EX PARTE
REEXAMINATION CERTIFICATE
ISSUED UNDER 35 U.S.C. 307

NO AMENDMENTS HAVE BEEN MADE TO
THE PATENT

2
AS A RESULT OF REEXAMINATION, IT HAS BEEN
DETERMINED THAT:

5 The patentability of claims **1-13** is confirmed.

* * * * *