

Search Notes 	Application/Control No. 12644511	Applicant(s)/Patent Under Reexamination AHERN ET AL.
	Examiner KIM T HUYNH	Art Unit 2111

SEARCHED			
Class	Subclass	Date	Examiner
710	305-306; 100	6/7/2010	kh
370	413	6/7/2010	kh

SEARCH NOTES		
Search Notes	Date	Examiner

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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<i>Index of Claims</i> 	Application/Control No. 12644511	Applicant(s)/Patent Under Reexamination AHERN ET AL.
	Examiner KIM T HUYNH	Art Unit 2111

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant		☐ CPA		☐ T.D.		☐ R.1.47			
CLAIM		DATE							
Final	Original	06/07/2010							
	1	✓							
	2	✓							
	3	✓							
	4	✓							
	5	✓							
	6	✓							
	7	✓							
	8	✓							
	9	✓							
	10	✓							
	11	✓							
	12	✓							
	13	✓							
	14	✓							
	15	✓							
	16	✓							
	17	✓							
	18	✓							
	19	✓							
	20	✓							



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BIB DATA SHEET

CONFIRMATION NO. 6489

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
12/644,511	12/22/2009	710	2111	TALS0090
RULE				
APPLICANTS Frank W. Ahern, Payson, AZ; Desi Rhoden, Phoenix, AZ; Jeff Doss, Scottsdale, AZ; Charles Mollo, Phoenix, AZ;				
** CONTINUING DATA ***** This application is a CON of 11/300,131 12/13/2005 PAT 7,657,678 which is a CON of 09/559,678 04/27/2000 PAT 7,734,852 which claims benefit of 60/198,317 04/19/2000 and is a CIP of 09/130,057 08/06/1998 PAT 6,088,752 and is a CIP of 09/130,058 08/06/1998 PAT 6,070,214 ack /kh/ 6/4/2010 none /kh/ 6/4/2010				
** FOREIGN APPLICATIONS *****				
** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 01/08/2010				
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and Acknowledged <u>/Kim T. Huynh /</u> Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY AZ	SHEETS DRAWINGS 2	TOTAL CLAIMS 20
				INDEPENDENT CLAIMS 3
ADDRESS Sadler, Breen, Morasch & Colby, ps 422 W. Riverside Ave, Suite 424 Spokane, WA 99201 UNITED STATES				
TITLE Computing Module with Serial Data Connectivity				
FILING FEE RECEIVED 1090	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit	

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	9	asynchron\$6 with ("parallel bus" pci) with (serial\$5 adj link)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/06/07 06:59
L2	4	@ad< "20000419" and 1	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/06/07 06:59
L3	1	asynchron\$6 with ("parallel bus" pci) with (serial\$5 adj exchange\$3)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/06/07 07:33
L4	1	asynchron\$6 with ("parallel bus" pci) with (serial\$5 near6 exchange \$3)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/06/07 07:33
L5	962	asynchron\$6 with ("parallel bus" pci)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/06/07 07:38
L6	2	asynchron\$6 with ("parallel bus" pci) and (serial\$5 adj exchange\$3)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/06/07 07:39
L7	288	"710"/\$.ccls. and 5	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/06/07 07:39
L8	49	"710"/305-306.ccls. and 5	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/06/07 07:39
L9	18	@ad< "20000419" and 8	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/06/07 07:39

S1	21203889	@ad< "20010928"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2004/06/08 16:26
S2	0	last-first\$.in.	US-PGPUB; USPAT	OR	ON	2003/09/29 12:04
S3	2	ep-804933-\$.did.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2003/05/02 11:17
S4	15898	"710"/\$.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2003/05/31 12:37
S5	0	(asynchronyz\$3 with bus)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/15 10:51
S6	11646	(asynchron\$6 with bus)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/15 10:51
S7	99	asynchron\$6 with "parallel bus"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/15 10:51
S8	99	asynchron\$6 with "parallel bus"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/15 13:00
S9	35	@ad< "20000419" and S8	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/15 13:00

S10	68	(("5701483") or ("5579489") or ("6446192") or ("5781747") or ("5764924") or ("4882702") or ("5191657") or ("6044215") or ("4941845") or ("4969830") or ("5187645") or ("5373149") or ("5477415") or ("5724529") or ("5432916") or ("5191653") or ("5579491") or ("5632020") or ("5634080") or ("5941965") or ("6578101") or ("7269680") or ("7356643") or ("6715022") or ("6594719") or ("5991304") or ("6950440") or ("6201829") or ("4591660") or ("6473810") or ("6445711") or ("6581125") or ("6778543") or ("6728822")).PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/06/15 13:15
S11	53	((("6141744") or ("6788101") or ("6058144") or ("5452180") or ("6070214") or ("6418504") or ("20020078289") or ("5475818") or ("5335326") or ("5586265") or ("5561806") or ("5457785") or ("5819053") or ("5003105") or ("5671421") or ("5313589") or ("4901308") or ("6401157") or ("5357621") or ("5430635") or ("5913037") or ("6167120") or ("6366951") or ("5548730") or	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/06/15 13:18

		("5524252") or ("5301349")).PN.				
S12	60	((("5774681") or ("5799207") or ("5483020") or ("5809262") or ("5522050") or ("5793995") or ("5748921") or ("4112369") or ("200424809") or ("20040088452") or ("6671737") or ("5736968") or ("6493745") or ("20030120849") or ("20040054757") or ("20050036509") or ("20050129385") or ("20050174488") or ("3800097") or ("4413319") or ("4504927") or ("0487029") or ("4954949") or ("4959833") or ("4961140") or ("5006981") or ("5038320") or ("5111423")).PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/06/15 13:20
S13	52	((("5237690") or ("5274711") or ("5325491") or ("5335329") or ("5430847") or ("5446869") or ("5495569") or ("5497498") or ("5507002") or ("5517623") or ("5530895") or ("5540597") or ("5542055") or ("5555510") or ("5572525") or ("5572688") or ("5590377") or ("5611053") or ("5655142") or ("5694556") or ("5696949") or ("20060075166") or ("7047326") or ("20010037423") or ("5377184") or ("5440698")).PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/06/15 13:22

S14	54	(("5469545") or ("5802055") or ("5832279") or ("5835741") or ("5854908") or ("5905870") or ("5911055") or ("6026075") or ("6031821") or ("6035333") or ("6084856") or ("6098103") or ("6115356") or ("6157967") or ("6167029") or ("6170022") or ("6222825") or ("6247091") or ("6263397") or ("6295281") or ("6333929") or ("6385671") or ("6421352") or ("6425033") or ("6456590") or ("6457081") or ("20020135536")).PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/06/15 13:25
S15	1	asynchron\$6 with ("parallel bus" pci) with (serially adj exchang\$4)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/06/04 11:57
S16	335	asynchron\$6 with ("parallel bus" pci) with serial\$5	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/06/04 11:57
S17	43	asynchron\$6 with ("parallel bus" pci) with serial\$5 with module	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/06/04 11:58
S18	6	@ad< "20000419" and S17	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/06/04 11:58
S19	79	asynchron\$6 with ("parallel bus" pci) with module	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/06/04 12:00

S20	1842789	@ad< "20000419" and "35"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/06/04 12:00
S21	15	@ad< "20000419" and S19	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/06/04 12:00
S22	335	asynchron\$6 with ("parallel bus" pci) with serial\$5	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/06/04 12:01
S23	51	@ad< "20000419" and S22	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/06/04 12:01
S24	79	((("7657678") or ("20010011312") or ("20020078289") or ("20010037423") or ("20020135536") or ("20030120849") or ("20040024809") or ("20040054757") or ("20040024809") or ("20040054757") or ("20040088452") or ("20050036509") or ("20050129385") or ("20050174488") or ("20060075166") or ("3800097") or ("4112369") or ("4413319") or ("4504927") or ("4535421") or ("4591660") or ("4787029") or ("4882702") or ("4901308") or ("4941845") or ("4954949") or ("4959833") or ("4961140") or ("4969830") or ("5006981") or ("5038320") or ("5111423") or ("5134702") or ("5187645") or ("5191653") or ("5191657") or ("5237690") or	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/06/04 12:35

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S25	64	("5301349") or ("5313589") or ("5325491") or ("5335326") or ("5335329") or ("5357621") or ("5373149") or ("5377184") or ("5430847") or ("5432916") or ("5440698") or ("5446869") or ("5452180") or ("5477415") or ("5483020") or ("5488705") or ("5495569") or ("5497498") or ("5507002") or ("5517623") or ("5522050") or ("5524252") or ("5530895") or ("5540597") or ("5542055") or ("5548730") or ("5555510") or ("5561806") or ("5572525") or ("5572688") or ("5579489") or ("5579491").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/06/04 12:39
S26	68	("5586265") or ("5590377") or ("5611053") or ("5632020") or ("5634080") or ("5655142") or ("5694556") or ("5696911") or ("5696949") or ("5701483") or ("5724529") or ("5736968") or ("5748921") or ("5764924") or ("5774681") or ("5781747") or ("5793995") or ("5793996") or ("5799207") or ("5802055") or ("5809262") or ("5815677") or ("5819053") or ("5832279") or ("5835741") or	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/06/04 12:42

		("5854908") or ("5884027") or ("5905870") or ("5911055") or ("5913037") or ("5941965") or ("5948076") or ("5953511") or ("5968144")).PN.				
S27	71	(("5991304") or ("5991839") or ("6003105") or ("6026075") or ("6031821") or ("6035333") or ("6044215") or ("6058144") or ("6070214") or ("6084856") or ("6085278") or ("6098103") or ("6101563") or ("6115356") or ("6141744") or ("6157967") or ("6167029") or ("6167120") or ("6170022") or ("6201829") or ("6216185") or ("6222825") or ("6233639") or ("6237046") or ("6247086") or ("6247091") or ("6256691") or ("6260092") or ("6263385") or ("6263397") or ("6275888") or ("6295281") or ("6333929") or ("6366951") or ("6381661")).PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/06/04 12:45
S28	61	(("6385671") or ("6401157") or ("6418492") or ("6418494") or ("6418504") or ("6421352") or ("6425033") or ("6430635") or ("6445711") or ("6446192") or ("6452927") or ("6456590") or ("6457081") or ("6457091") or	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/06/04 12:48

		("6473810") or ("6493745") or ("6567876") or ("6578101") or ("6581125") or ("6594719") or ("6671737") or ("6715022") or ("6728822") or ("6778543") or ("6788101") or ("6950440") or ("7047326") or ("7269680") or ("7356643")).PN.				
S29	2	("5991304").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/06/04 13:00

6/ 7/ 10 8:59:40 AM

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Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				<i>Complete if Known</i> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">Application Number</td> <td>12/644,511</td> </tr> <tr> <td>Filing Date</td> <td>December 22, 2009</td> </tr> <tr> <td>First Named Inventor</td> <td>Ahern, Frank</td> </tr> <tr> <td>Art Unit</td> <td>2111</td> </tr> <tr> <td>Examiner Name</td> <td>Unknown</td> </tr> </table>		Application Number	12/644,511	Filing Date	December 22, 2009	First Named Inventor	Ahern, Frank	Art Unit	2111	Examiner Name	Unknown
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Art Unit	2111														
Examiner Name	Unknown														
Sheet	1	of	1	Attorney Docket No: TALS0090											

US PATENT DOCUMENTS					
Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Filing Date If Appropriate
/KH/		US-7657678	02/02/2010	Ahern, Frank W.	

FOREIGN PATENT DOCUMENTS					
Examiner Initials*	Cite No	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of cited Document	T ²

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS				
Examiner Initials*	Cite No ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.		T ²
/KH/		"Notice of Allowance", Application Serial No. 09/559,678, (1/29/10), 4 pages		
/KH/		"Notice of Allowance and Examiner's Amendment", Application Serial No. 11/183,298, (2/25/2010), 9 pages		

EXAMINER

/Kim Huynh/ (06/17/2010)

DATE CONSIDERED

06/17/2010

Substitute Disclosure Statement Form (PTO-1449)
* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.¹ Applicant's unique citation designation number (optional) ² Applicant is to place a check mark here if English language Translation is attached

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				<i>Complete if Known</i> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">Application Number</td> <td>Unknown</td> </tr> <tr> <td>Filing Date</td> <td>December 22, 2009</td> </tr> <tr> <td>First Named Inventor</td> <td>Ahern, Frank</td> </tr> <tr> <td>Art Unit</td> <td>Unknown</td> </tr> <tr> <td>Examiner Name</td> <td>Unknown</td> </tr> </table>		Application Number	Unknown	Filing Date	December 22, 2009	First Named Inventor	Ahern, Frank	Art Unit	Unknown	Examiner Name	Unknown
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Examiner Name	Unknown														
Sheet	1	of	10	Attorney Docket No: TALS0090											

US PATENT DOCUMENTS					
Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Filing Date If Appropriate
/KH/		US-20010011312	08/02/2001	Chu, William	
		US-20010037423	11/01/2001	Conway, Craig M., et al.	
		US-20020078289	06/20/2002	Morrow, Neil G.	
		US-20020135536	09/26/2002	Bruning, Gert	
		US-20030120849	06/26/2003	Roslak, Thomas K., et al.	
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		US-20040054757	03/18/2004	Ueda, Akinobu et al.	
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		US-3800097	03/26/1974	Maruscak, John et al.	
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		US-4504927	03/12/1985	Callan, John E.	
		US-4535421	08/13/1985	Duwel, Edward C., et al.	
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		US-4787029	11/22/1988	Khan, Salim M.	
		US-4882702	11/21/1989	Struger, Odo J., et al.	
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		US-4941845	07/17/1990	Eppley, Mark et al.	
		US-4954949	09/04/1990	Rubin, Henri	
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		US-5187645	02/16/1993	Spalding, Tom J., et al.	
		US-5191653	03/02/1993	Banks, John D., et al.	
		US-5191657	03/02/1993	Ludwig, Thomas E., et al.	
		US-5237690	08/17/1993	Bealkowski, Richard et al.	
		US-5274711	12/28/1993	Rutledge, Janet C., et al.	

EXAMINER

/Kim Huynh/ (06/17/2010)

DATE CONSIDERED

06/17/2010

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Art Unit	Unknown														
Examiner Name	Unknown														
Sheet	2	of	10	Attorney Docket No: TALS0090											

US PATENT DOCUMENTS					
Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Filing Date If Appropriate
/KH/		US-5301349	04/05/1994	Nakata, Shigeharu et al.	
		US-5313589	05/17/1994	Donaldson, James E., et al.	
		US-5325491	06/28/1994	Fasig, Johathan L.	
		US-5335326	08/02/1994	Nguyen, Uoc H., et al.	
		US-5335329	08/02/1994	Cox, Stanley E., et al.	
		US-5357621	10/18/1994	Cox, Darrell L.	
		US-5373149	12/13/1994	Rasmussen, Kris A., et al.	
		US-5377184	12/27/1994	Beal, Peter et al.	
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		US-5440698	08/08/1995	Sindhu, Pradeep S., et al.	
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		US-5457785	10/10/1995	Kikinis, Dan et al.	
		US-5469545	11/21/1995	Vanbuskirk, Michael R., et al.	
		US-5475818	12/12/1995	Molyneaux, William F., et al.	
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		US-5483020	01/09/1996	Hardie, William G., et al.	
		US-5488705	01/30/1996	Labarbera, Richard S.	
		US-5495569	02/27/1996	Kotzur, Gary B.	
		US-5497498	03/05/1996	Taylor, Brad	
		US-5507002	04/09/1996	Heil, Thomas F.	
		US-5517623	05/14/1996	Farrell, Anthony E., et al.	
		US-5522050	05/28/1996	Amini, Nader et al.	
		US-5524252	06/04/1996	Desai, Dhruv M., et al.	
		US-5530895	06/25/1996	Enstrom, Mark	
		US-5540597	07/30/1996	Budman, Mark et al.	
		US-5542055	07/30/1996	Amini, Nader et al.	
		US-5548730	08/20/1996	Young, Bruce	
		US-5555510	09/10/1996	Verseput, Jerry et al.	
		US-5561806	10/01/1996	Fitchett, John A., et al.	
		US-5572525	11/05/1996	Shen, Tian et al.	
		US-5572688	11/05/1996	Sytwu, James T.	
		US-5579489	11/26/1996	Dornier, P. et al.	
		US-5579491	11/26/1996	Jeffries, Kenneth L., et al.	

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/Kim Huynh/ (06/17/2010)

DATE CONSIDERED

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Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: right; font-size: small;">Complete if Known</th> </tr> <tr> <td style="width: 30%;">Application Number</td> <td>Unknown</td> </tr> <tr> <td>Filing Date</td> <td>December 22, 2009</td> </tr> <tr> <td>First Named Inventor</td> <td>Ahern, Frank</td> </tr> <tr> <td>Art Unit</td> <td>Unknown</td> </tr> <tr> <td>Examiner Name</td> <td>Unknown</td> </tr> </table>	Complete if Known		Application Number	Unknown	Filing Date	December 22, 2009	First Named Inventor	Ahern, Frank	Art Unit	Unknown	Examiner Name	Unknown
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Sheet	3	of	10	Attorney Docket No: TALS0090											

US PATENT DOCUMENTS					
Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Filing Date If Appropriate
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EXAMINER

/Kim Huynh/ (06/17/2010)

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Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Filing Date If Appropriate
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		US-6157967	12/05/2000	Horst, Robert W., et al.	
		US-6167029	12/26/2000	Ramakrishnan, Gopal	
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Sheet	5	of	10	Attorney Docket No: TALS0090											

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		"Non Final Office Action", Application Serial No. 11/183,298, (10/30/07),33 pages	
		"Final Office Action", Application Serial No. 11/183,298, (09/15/06),33 pages	
		"Non Final Office Action", Application Serial No. 11/183,298, (02/15/06),28 Pages	
		"Non Final Office Action", Application Serial No. 09/559,678, (10/30/08),7 pages	
		"Non Final Office Action", Application Serial No. 09/559,678, (03/27/08),9 pages	
		"Final Office Action", Application Serial No. 09/559,678, (08/20/07),9 pages	
		"Non Final Office Action", Application Serial No. 09/559,678, (11/24/06),8 pages	
		"Non Final Office Action", Application Serial No. 09/559,678, (05/02/06),6 pages	
		"Final Office Action", Application Serial No. 09/559,678, (11/08/05),7 pages	
		"Non Final Office Action", Application Serial No. 09/559,678, (03/08/05),7 pages	
		"Final Office Action", Application Serial No. 09/559,678, (06/22/04),7 pages	
		"Non Final Office Action", Application Serial No. 09/559,678, (09/17/03),7 Pages	
		"Non Final Office Action", Application Serial No. 9/559,678, (12/04/02),7 pages	
		"Non Final Office Action", Application Serial No. 11/513,806, (03/12/07),10 pages	
		"Final Office Action", Application Serial No. 11/513,806, (09/27/07),8 pages	
		"Advisory Action", Application Number 11/513,806, PTOL 303,(04/10/08),pp. 2-3	
		"Non Final Office Action", Application Serial No. 11/513,806, (10/02/08),10 pages	
		"Non Final Office Action", Application Serial No. 11/300,131, (12/15/06),9 pages	
		"Final Office Action", Application Serial No. 11/300,131, (08/20/07),9 pages	

EXAMINER

/Kim Huynh/ (06/17/2010)

DATE CONSIDERED

06/17/2010

Substitute Disclosure Statement Form (PTO-1449)
* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.1 Applicant's unique citation designation number (optional) 2 Applicant is to place a check mark here if English language Translation is attached

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				<i>Complete if Known</i>	
				Application Number	Unknown
				Filing Date	December 22, 2009
				First Named Inventor	Ahern, Frank
				Art Unit	Unknown
				Examiner Name	Unknown
Sheet	8	of	10	Attorney Docket No: TALS0090	

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
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EXAMINER

/Kim Huynh/ (06/17/2010)

DATE CONSIDERED

06/17/2010

Substitute Disclosure Statement Form (PTO-1449)
* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional) 2 Applicant is to place a check mark here if English language Translation is attached

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)			<i>Complete if Known</i>		
			Application Number	Unknown	
			Filing Date	December 22, 2009	
			First Named Inventor	Ahern, Frank	
			Art Unit	Unknown	
			Examiner Name	Unknown	
Sheet	9	of	10	Attorney Docket No: TALS0090	

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
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Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				<i>Complete if Known</i> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">Application Number</td> <td>Unknown</td> </tr> <tr> <td>Filing Date</td> <td>December 22, 2009</td> </tr> <tr> <td>First Named Inventor</td> <td>Ahern, Frank</td> </tr> <tr> <td>Art Unit</td> <td>Unknown</td> </tr> <tr> <td>Examiner Name</td> <td>Unknown</td> </tr> </table>		Application Number	Unknown	Filing Date	December 22, 2009	First Named Inventor	Ahern, Frank	Art Unit	Unknown	Examiner Name	Unknown
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Sheet	10	of	10	Attorney Docket No: TALS0090											

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
/KH/		MORA, F et al., "Electronic Design of a High Performance Interface to the SCI Network", <u>IEEE</u> 1998, (1998),p. 535-538	
↓		HARPER, STEPHEN "Update on PCMCIA Standards Activities: Cardbus and Beyond", <u>PCMCIA</u> 1995, (1995),pp. 136-144	
↓		BUI, H Q., et al., "60x Bus-to-PCI Bridge", <u>IBM TDB</u> , Vol. 38 No. 5, May 1995, (05/1995),pp. 401-402	
↓		ANON, "Remote Memory Access Interface Between Two Personal Computers", <u>IBM Technical Disclosure Bulletin</u> v 28 n 9 Feb 1986, (1986),4110-4113	
↓		KARL, WOLFGANG et al., "SCI Monitoring Hardware and Software: Supporting Performance Evaluation and Debugging", Book Title: SCI: Scalable Coherent Interface. Architecture and Software for High-performance Compute Clusters,(1999),pp. 417-432	
↓		POOR, ALFRED "The Expansion Bus.(ISA, PCI, and AGP)(Technology Information)", <u>PC Magazine</u> , 194(1) Jan 19, 1999, (1/19/1999),5 pages	
↓		SURKAN, MICHAEL "NetFrame takes lead in reliability: ClusterSystem's hot-swappable PCI a", <u>PC Week</u> , v14, n34, p60(1) August 11, 1997, NetFRAME Systems' ClusterSystem 9008 Pentium Pro-based system) (Hardware Review)(Evaluation),(8/11/1997),4 pages	
↓		BALATSOS, A. et al., "A Bridge for a Multiprocessor Graphics System", <u>Proceedings of the 2002 IEEE Canadian Conference on Electrical and Computer Engineering</u> , (2002),pp. 646-650	
↓		"MC68HC11A8 - HCMOS Single-Chip Microcontroller", <u>Motorola, Inc.</u> 1996, (1996),158 pages	
↓		"Notice of Allowance", <u>Application Number 11/300,131</u> , (10/22/2009),4 pages	
↓		"Notice of Allowance", <u>Application Serial No. 09/559,678</u> , (10/26/2009),4 pages	
↓		"Notice of Allowance", <u>Application Number 11/300,131</u> , (12/04/2009),4 pages	
↓		"Foreign Notice of Allowance", <u>Application Serial No. 2,445,711</u> , (11/24/2009),1 page	

EXAMINER

/Kim Huynh/ (06/17/2010)

DATE CONSIDERED

06/17/2010

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				<i>Complete if Known</i> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">Application Number</td> <td>12/644,511</td> </tr> <tr> <td>Filing Date</td> <td>December 22, 2009</td> </tr> <tr> <td>First Named Inventor</td> <td>Ahern, Frank</td> </tr> <tr> <td>Art Unit</td> <td>2111</td> </tr> <tr> <td>Examiner Name</td> <td>Unknown</td> </tr> </table>		Application Number	12/644,511	Filing Date	December 22, 2009	First Named Inventor	Ahern, Frank	Art Unit	2111	Examiner Name	Unknown
Application Number	12/644,511														
Filing Date	December 22, 2009														
First Named Inventor	Ahern, Frank														
Art Unit	2111														
Examiner Name	Unknown														
Sheet	1	of	1	Attorney Docket No: TALS0090											

US PATENT DOCUMENTS					
Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Filing Date If Appropriate
		US-7657678	02/02/2010	Ahern, Frank W.	

FOREIGN PATENT DOCUMENTS					
Examiner Initials*	Cite No	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of cited Document	T ²

OTHER DOCUMENTS -- NON PATENT LITERATURE DOCUMENTS				
Examiner Initials*	Cite No ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.		T ²
		"Notice of Allowance", Application Serial No. 09/559,678, (1/29/10), 4 pages		
		"Notice of Allowance and Examiner's Amendment", Application Serial No. 11/183,298, (2/25/2010), 9 pages		

EXAMINER

DATE CONSIDERED

Substitute Disclosure Statement Form (PTO-1449)
 * EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.¹ Applicant's unique citation designation number (optional) ² Applicant is to place a check mark here if English language Translation is attached

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number

Effective on 12/08/2004.

Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

**FEE TRANSMITTAL
For FY 2008**☐ Applicant claims small entity status. See 37 CFR 1.27**TOTAL AMOUNT OF PAYMENT** (\$) 0.00**Complete if Known**

Application Number	12/644,511
Filing Date	December 22, 2009
First Named Inventor	Ahern, Frank W.
Examiner Name	Unknown
Art Unit	2111
Attorney Docket No.	TALS0090

METHOD OF PAYMENT (check all that apply)
☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☒ Deposit Account Deposit Account Number: 50-4143 Deposit Account Name: Sadler, Breen, Morasch, & Colby ps

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, **except for the filing fee**
☒ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17 ☒ Credit any overpayments
WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.**FEE CALCULATION****1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	<u>Small Entity</u> Fee (\$)	Fee (\$)	<u>Small Entity</u> Fee (\$)	Fee (\$)	<u>Small Entity</u> Fee (\$)	
Utility	310	155	510	255	210	105	
Design	210	105	100	50	130	65	
Plant	210	105	310	155	160	80	
Reissue	310	155	510	255	620	310	
Provisional	210	105	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee (\$)	<u>Small Entity</u> Fee (\$)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	210	105
Multiple dependent claims	370	185
Total Claims		
Extra Claims		
Fee (\$)		
Fee Paid (\$)		
HP = highest number of total claims paid for, if greater than 20.		
Indep. Claims		
Extra Claims		
Fee (\$)		
Fee Paid (\$)		
HP = highest number of independent claims paid for, if greater than 3.		

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$260 (\$130 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
_____ - 100 = _____	_____ / 50 = _____	(round up to a whole number) x _____	= _____	

4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount)

Other (e.g., late filing surcharge): _____

SUBMITTED BY

Signature	/Allan T. Sponseller, Reg. #38,318/	Registration No. 38,318 (Attorney/Agent)	Telephone 507-755-7262
Name (Print/Type)	Allan T. Sponseller	Date	04/23/2010

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	7476681
Application Number:	12644511
International Application Number:	
Confirmation Number:	6489
Title of Invention:	Computing Module with Serial Data Connectivity
First Named Inventor/Applicant Name:	Frank W. Ahern
Customer Number:	75671
Filer:	William Breen/Kenneth Linder
Filer Authorized By:	William Breen
Attorney Docket Number:	TALS0090
Receipt Date:	23-APR-2010
Filing Date:	22-DEC-2009
Time Stamp:	14:37:39
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		TALS0090IDS.pdf	161702 fca546b3a3b5d8849eae56684f4cc480f9066772	yes	3

	Multipart Description/PDF files in .zip description								
	Document Description		Start	End					
	Transmittal Letter		1	2					
	Information Disclosure Statement (IDS) Filed (SB/08)		3	3					
Warnings:									
Information:									
2	NPL Documents	TALS0034NOAExamAmendment.pdf	439380 56f740f4e12005a5f712b7c00c5650109eaeaf0	no	9				
Warnings:									
Information:									
3	NPL Documents	TALS0042NOA012910.pdf	257441 1cc59ae57da862a0f05c7892c0cfd122a1736be6	no	4				
Warnings:									
Information:									
4	Fee Worksheet (PTO-875)	TALS0090FeeTransmittal.pdf	61567 22032fd4a01a27cde58bacd6a4a53efbc6208cb9	no	1				
Warnings:									
Information:									
Total Files Size (in bytes):			920090						
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>									

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Frank W. Ahern et al.	Examiner:	Unknown
Serial No.:	12/644,511	Group Art Unit:	2111
Filed:	December 22, 2009	Docket:	TALS0090
Title:	A Computing Module with Serial Data Connectivity		

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 *et. seq.*, the referenced materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application. Applicants respectfully request that this Supplemental Information Disclosure Statement be entered and the documents listed on the attached Form 1449 be considered by the Examiner and made of record. Pursuant to the provisions of MPEP 609, Applicants request that a copy of the 1449 form, initialed as being considered by the Examiner, be returned to the Applicants with the next official communication.

Pursuant to 37 C.F.R. §1.97(b), it is believed that no fee or statement is required with the Supplemental Information Disclosure Statement. However, if an Office Action on the merits has been mailed, the Commissioner is hereby authorized to charge the required fees to Deposit Account No. 50-4143 in order to have this Supplemental Information Disclosure Statement considered.

Pursuant to 37 C.F.R. 1.98(a)(2), Applicant believes that copies of cited U.S. Patents and Published Applications are no longer required to be provided to the Office. Notification of this change was provided in the United States Patent and Trademark Office OG Notices dated October 12, 2004. Thus, Applicant has not included copies of any US Patents or Published Applications cited with this submission. Should the Office require copies to be provided, Applicant respectfully requests that notice of such requirement be directed to Applicant's below-signed representative. Applicant acknowledges the requirement to submit copies of foreign patent documents and non-patent literature in accordance with 37 C.F.R. 1.98(a)(2).

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Serial No :12/644,511

Filing Date: December 22, 2009

Title: A Computing Module with Serial Data Connectivity

Page 2

Dkt: TALS0090

Respectfully submitted,

FRANK W. AHERN ET AL.

By their Representatives,

Date April 23, 2010

By /Allan T. Sponseller, Reg. #38,318/
Allan T. Sponseller
Reg. No. 38,318



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/644,511	12/22/2009	Frank W. Ahern	TALS0090

CONFIRMATION NO. 6489

PUBLICATION NOTICE



OC000000041238152

75671

Sadler, Breen, Morasch & Colby, ps
422 W. Riverside Ave, Suite 424
Spokane, WA 99201

Title:Computing Module with Serial Data Connectivity

Publication No.US-2010-0100650-A1

Publication Date:04/22/2010

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <http://pair.uspto.gov/>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
12/644,511	12/22/2009	2111	1090	TALS0090	20	3

CONFIRMATION NO. 6489

75671

Sadler, Breen, Morasch & Colby, ps
422 W. Riverside Ave, Suite 424
Spokane, WA 99201

FILING RECEIPT



OC000000039576744

Date Mailed: 01/12/2010

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Frank W. Ahern, Payson, AZ;
Desi Rhoden, Phoenix, AZ;
Jeff Doss, Scottsdale, AZ;
Charles Mollo, Phoenix, AZ;

Power of Attorney: The patent practitioners associated with Customer Number 75671

Domestic Priority data as claimed by applicant

This application is a CON of 11/300,131 12/13/2005
which is a CON of 09/559,678 04/27/2000
which claims benefit of 60/198,317 04/19/2000
and is a CIP of 09/130,057 08/06/1998 PAT 6,088,752
and is a CIP of 09/130,058 08/06/1998 PAT 6,070,214

Foreign Applications

If Required, Foreign Filing License Granted: 01/08/2010

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/644,511**

Projected Publication Date: 04/22/2010

Non-Publication Request: No

Early Publication Request: No

Title

Computing Module with Serial Data Connectivity

Preliminary Class

710

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

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The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/644,511	12/22/2009	Frank W. Ahern	TALS0090

75671
Sadler, Breen, Morasch & Colby, ps
422 W. Riverside Ave, Suite 424
Spokane, WA 99201

CONFIRMATION NO. 6489
POA ACCEPTANCE LETTER



Date Mailed: 01/12/2010

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 12/22/2009.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/nbekele/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)				<i>Complete if Known</i> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">Application Number</td> <td>Unknown</td> </tr> <tr> <td>Filing Date</td> <td>December 22, 2009</td> </tr> <tr> <td>First Named Inventor</td> <td>Ahern, Frank</td> </tr> <tr> <td>Art Unit</td> <td>Unknown</td> </tr> <tr> <td>Examiner Name</td> <td>Unknown</td> </tr> </table>		Application Number	Unknown	Filing Date	December 22, 2009	First Named Inventor	Ahern, Frank	Art Unit	Unknown	Examiner Name	Unknown
Application Number	Unknown														
Filing Date	December 22, 2009														
First Named Inventor	Ahern, Frank														
Art Unit	Unknown														
Examiner Name	Unknown														
Sheet	1	of	10	Attorney Docket No: TALS0090											

US PATENT DOCUMENTS					
Examiner Initial *	Cite No	Document Number	Publication Date	Name of Patentee or Applicant of Cited Document	Filing Date If Appropriate
		US-20010011312	08/02/2001	Chu, William	
		US-20010037423	11/01/2001	Conway, Craig M., et al.	
		US-20020078289	06/20/2002	Morrow, Neil G.	
		US-20020135536	09/26/2002	Bruning, Gert	
		US-20030120849	06/26/2003	Roslak, Thomas K., et al.	
		US-20040024809	02/05/2004	Edwards, Warren K., et al.	
		US-20040054757	03/18/2004	Ueda, Akinobu et al.	
		US-20040088452	05/06/2004	Scott, Bryan	
		US-20050036509	02/17/2005	Acharya, Shrikant et al.	
		US-20050129385	06/16/2005	Speasl, Jerry A., et al.	
		US-20050174488	08/11/2005	Chennakeshu, Sandeep	
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		US-3800097	03/26/1974	Maruscak, John et al.	
		US-4112369	09/05/1978	Forman, Aubry S., et al.	
		US-4413319	11/01/1983	Schultz, Ronald E., et al.	
		US-4504927	03/12/1985	Callan, John E.	
		US-4535421	08/13/1985	Duwel, Edward C., et al.	
		US-4591660	05/27/1986	Scordo, Dominick	
		US-4787029	11/22/1988	Khan, Salim M.	
		US-4882702	11/21/1989	Struger, Odo J., et al.	
		US-4901308	02/13/1990	Deschaine, Stephen A.	
		US-4941845	07/17/1990	Eppeley, Mark et al.	
		US-4954949	09/04/1990	Rubin, Henri	
		US-4959833	09/25/1990	Mercola, Gerald K., et al.	
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Sheet	2	of	10	Attorney Docket No: TALS0090											

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Sheet	3	of	10	Attorney Docket No: TALS0090											

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Sheet	4	of	10	Attorney Docket No: TALS0090											

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Sheet	5	of	10	Attorney Docket No: TALS0090											

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Sheet	6	of	10	Attorney Docket No: TALS0090											

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Sheet	8	of	10	Attorney Docket No: TALS0090											

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		"Non Final Office Action", Application Serial No. 11/300,131, (03/27/08), 8 pages	
		"Non Final Office Action", Application Serial No. 11/300,131, (11/12/08), 6 pages	
		"Non Final Office Action", Application Serial No. 10/766,660, (05/15/06), 14 pages	
		"Final Office Action", Application Serial No. 10/766,660, (12/04/06), 16 pages	
		"Non Final Office Action", Application Serial No. 09/130,057, (07/21/99), 27 pages	
		"Notice of Allowance", Application Serial No. 09/130,057, (02/25/00), 5 pages	
		"Non Final Office Action", Application Serial No. 10/782,082, (6/9/06), 14 pages	
		"Final Office Action", Application Serial No. 10/782,082, (3/6/07), 11 Pages	
		"Advisory Action", Application Number 10/782,082, (07/09/07), 4 pages	
		"Non Final Office Action", Application Serial No. 10/782,082, (11/9/07), 10 Pages	
		"Final Office Action", Application Serial No. 10/782,082, (8/11/08), 11 pages	
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		"PCI to PCI Bridge Specifications", Author - PCI Special Interest Group Revision 1.0, (04/05/94), 26 pages	
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		"Final Office Action", Application Serial No. 09/819,053, (7/12/05), 14 pages	
		"Non Final Office Action", Application Serial No. 09/819,053, (03/02/06), 13 pages	
		"Notice of Allowance", Application Serial No. 09/819,053, (06/15/07), 6 pages	
		"Patent Abstracts of Japan Vol. 2003, No. 6, 3 June 2003 & JP 2003 050661", Casio Computer Co., Ltd., (2/21/03), 1 page	
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		"Notice of Allowance", Application Serial No. 09/819,057, (03/14/03), 4 pages	
		"Non Final Office Action", Application Serial No. 09/819,057, (11/26/02), 7 pages	
		"Notice of Allowance", Application Serial No. 09/819,054, (12/02/03), 6 pages	
		"Non Final Office Action", Application Serial No. 09/819,054, (01/28/03), 8 pages	
		"Notice of Allowance", Application Serial No. 09/130,058, (02/25/00), 4 pages	
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		"Non Final Office Action", Application Serial No. 11/513,976, (10/27/06), 7 pages	
		"Notice of Allowance", Application Serial No. 11/513,976, (1/16/08), 4 pages	
		"Foreign Office Action", Application Serial No. 2,445,711, (3/18/2009), 2 pages	
		"Notice of Allowance/Base Issue Fee", Application Serial No. 11/300,131, (6/18/2009), 4 pages	
		"Advisory Action", Application Number 10/782,082, (04/07/2009), 3 pages	
		"Foreign Office Action", Application Serial No. 2001-560830, (3/19/2009), 3 pages	
		"Foreign Office Action", Application Serial No. 2001-560831, (3/19/2009), 3 pages	
		"Notice of Allowance", Application Number 09/559,678, (06/26/09), 4 pages	
		"Notice of Allowance", Application Serial No. 09/559,678, (6/26/2009), 4 pages	
		"International Search Report", EP01925078, (10/30/2001), 2 Pages	
		"International Search Report", PCT/US2001/12678, (10/30/2001), 2 pages	
		"European Search Report", Application Number EP07000788, (10/1/2008), 1 Page	
		"International Search Report", PCT/US2001/12666, (11/15/2001), 2 pages	
		"Foreign Office Action", Application Serial No. 2006-203273, (7/21/2009), 10 pages	
		"Foreign Office Action", Application Serial No. 2006-203293, (6/26/2009), 9 pages	
		"Allowed Claims", Application Serial No. 09/559,678, (6/26/2009), 9 pages	
		"Allowed Claims", Application Serial No. 11/300,131, (6/18/2009), 7 pages	
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		HARPER, STEPHEN "Update on PCMCIA Standards Activities: Cardbus and Beyond", <u>PCMCIA</u> 1995, (1995),pp. 136-144		
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		KARL, WOLFGANG et al., "SCI Monitoring Hardware and Software: Supporting Performance Evaluation and Debugging", Book Title: SCI: Scalable Coherent Interface. Architecture and Software for High-performance Compute Clusters,(1999),pp. 417-432		
		POOR, ALFRED "The Expansion Bus.(ISA, PCI, and AGP)(Technology Information)", <u>PC Magazine</u> , 194(1) Jan 19, 1999, (1/19/1999),5 pages		
		SURKAN, MICHAEL "NetFrame takes lead in reliability: ClusterSystem's hot-swappable PCI a", <u>PC Week</u> , v14, n34, p60(1) August 11, 1997, NetFRAME Systems' ClusterSystem 9008 Pentium Pro-based system) (Hardware Review)(Evaluation),(8/11/1997),4 pages		
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		"MC68HC11A8 - HCMOS Single-Chip Microcontroller", <u>Motorola, Inc.</u> 1996, (1996),158 pages		
		"Notice of Allowance", <u>Application Number 11/300,131</u> , (10/22/2009),4 pages		
		"Notice of Allowance", <u>Application Serial No. 09/559,678</u> , (10/26/2009),4 pages		
		"Notice of Allowance", <u>Application Number 11/300,131</u> , (12/04/2009),4 pages		
		"Foreign Notice of Allowance", <u>Application Serial No. 2,445,711</u> , (11/24/2009),1 page		

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1/2

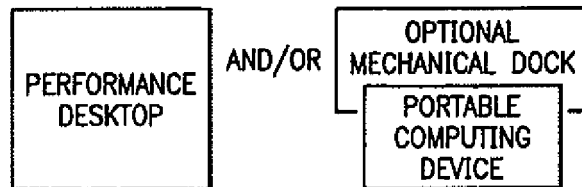


FIG. 1
(PRIOR ART)

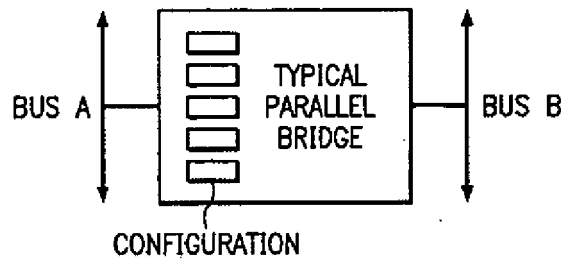


FIG. 2
(PRIOR ART)

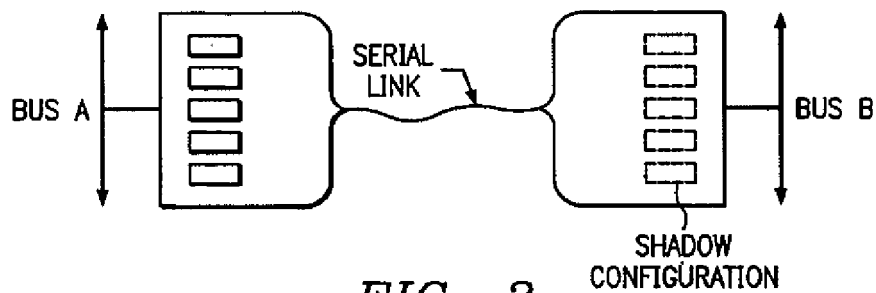


FIG. 3

2/2

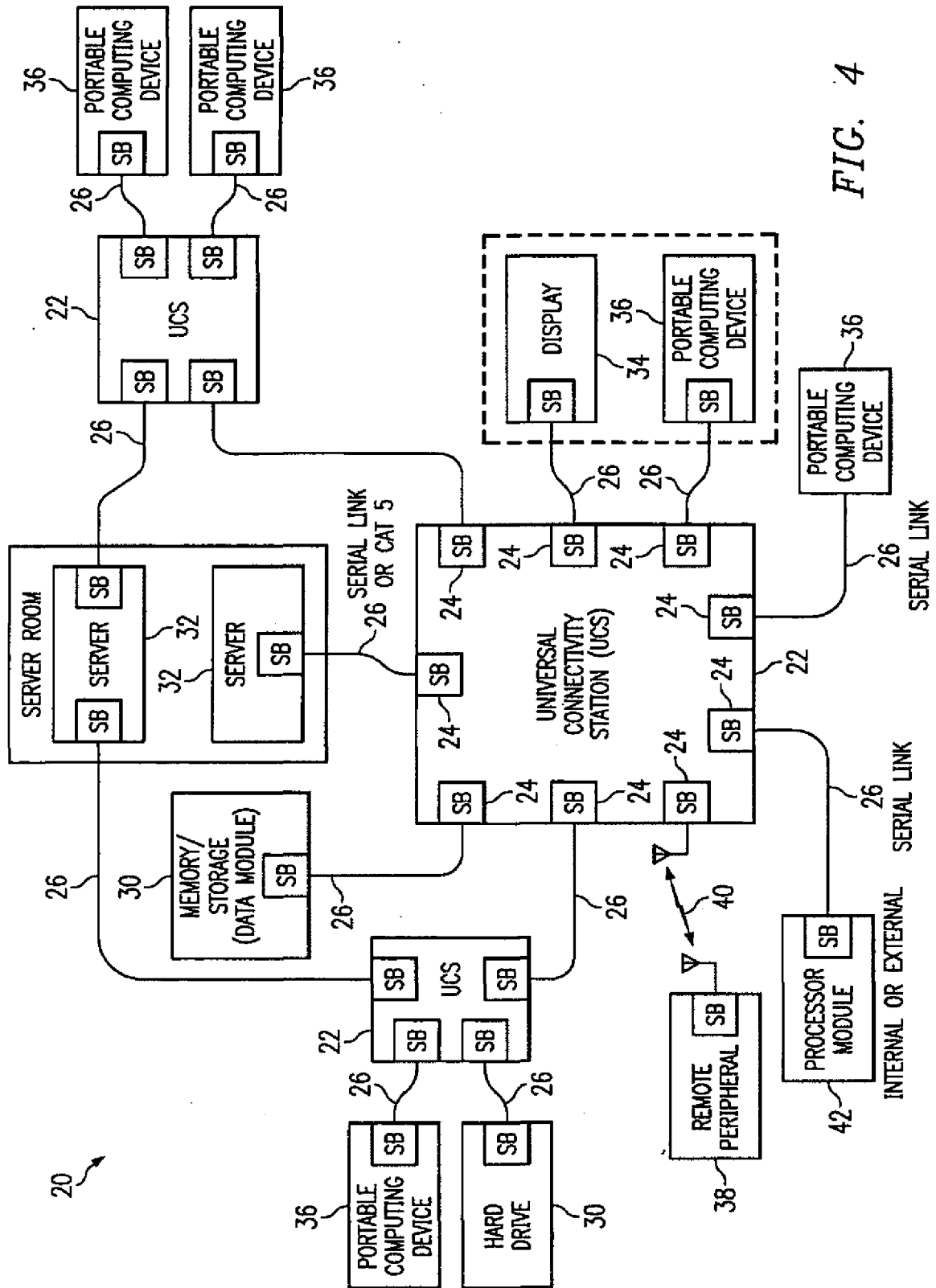


FIG. 4

Electronic Patent Application Fee Transmittal

Application Number:				
Filing Date:				
Title of Invention:	A Computing Module with Serial Data Connectivity			
First Named Inventor/Applicant Name:	Frank W. Ahern			
Filer:	William Breen/Kenneth Linder			
Attorney Docket Number:	TALS0090			
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility application filing	1011	1	330	330
Utility Search Fee	1111	1	540	540
Utility Examination Fee	1311	1	220	220
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1090

Electronic Acknowledgement Receipt

EFS ID:	6689124
Application Number:	12644511
International Application Number:	
Confirmation Number:	6489
Title of Invention:	A Computing Module with Serial Data Connectivity
First Named Inventor/Applicant Name:	Frank W. Ahern
Customer Number:	75671
Filer:	William Breen/Kenneth Linder
Filer Authorized By:	William Breen
Attorney Docket Number:	TALS0090
Receipt Date:	22-DEC-2009
Filing Date:	
Time Stamp:	14:38:00
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$ 1090
RAM confirmation Number	1189
Deposit Account	504143
Authorized User	SADLER,LANCE R.

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	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	18	
	Claims		19	22	
	Abstract		23	23	
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	Assignee showing of ownership per 37 CFR 3.73(b).		2	2	
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A COMPUTING MODULE WITH SERIAL DATA CONNECTIVITY

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is a Continuation of U.S. Patent Application No. 11/300,131, filed December 13, 2005, which is hereby incorporated by reference herein. U.S. Patent Application No. 11/300,131 is a Continuation of U.S. Patent Application No. 09/559,678, filed April 27, 2000, which is hereby incorporated by reference herein. U.S. Patent Application No. 09/559,678 claims the benefit of U.S. Provisional Application No. 60/198,317, filed April 19, 2000, which is hereby incorporated by reference herein. U.S. Patent Application No. 09/559,678 is a continuation-in-part application of U.S. Application No. 09/130,057, filed August 6, 1998, now U.S. Patent 6,088,752, which is hereby incorporated by reference herein. U.S. Patent Application No. 09/559,678 is also a continuation-in-part application of U.S. Application No. 09/130,058 filed August 6, 1998, now U.S. Patent 6,070,214, which is hereby incorporated by reference herein. U.S. Patent Application No. 09/559,678 is also related to U.S. Patent Application No. 08/679,131, now US Patent 5,941,965, which is hereby incorporated by reference herein.

FIELD OF THE INVENTION

[0002] The present invention is generally related to computers and data processing systems, and more particularly to computer systems having at least one host processor and connectable to a plurality of peripherals, expansion devices, and/or other computers, including notebook and other portable and handheld computers, storage devices, displays, USB, IEEE 1394, audio, keyboards, mice and so forth.

BACKGROUND OF THE INVENTION

[0003] Computer systems today are powerful, but are rendered limited in their ability to be divided into modular components due to a variety of technical limitations of today's PCI bus technology. And in their ability to adapt to changing computing environments. The PCI bus is pervasive in the industry, but as a parallel data bus is not easily extended over any distance or bridged to other remote PCI based devices due to loading and physical constraints, most notably the inability to extend the PCI bus more than a few inches. Full bridges are known, such as used in traditional laptop computer/docking stations. However, separating the laptop computer from the docking station a significant distance has not been possible. Moreover, the processing power of computer systems has been resident within the traditional computer used by the user because the microprocessor traditionally is directly connected to and resident on the PCI motherboard. Thus, upgrading processing power usually meant significant costs and/or replacing the computer or computer system.

[0004] PCI

[0005] The PCI bus is primarily a wide multiplexed address and data bus that provides support for everything from a single data word for every address to very long bursts of data words for a single address, with the implication being that burst data is intended for sequential addresses. Clearly the highest performance of the PCI bus comes from the bursts of data, however most PCI devices require reasonable performance for even the smallest single data word operations. Many PCI devices utilize only the single data mode for their transfers. In addition, starting with the implementation of the PCI 2.1 version of the specification, there has been at least pseudo isochronous behavior

demanding from the bus placing limits on an individual device's utilization of the bus, thus virtually guaranteeing every device gets a dedicated segment of time on a very regular interval and within a relatively short time period. The fundamental reason behind such operation of the PCI bus is to enable such things as real time audio and video data streams to be mixed with other operations on the bus without introducing major conflicts or interruption of data output. Imagine spoken words being broken into small unconnected pieces and you get the picture. Prior to PCI 2.1 these artifacts could and did occur because devices could get on the bus and hold it for indefinite periods of time. Before modification of the spec for version 2.1, there really was no way to guarantee performance of devices on the bus, or to guarantee time slot intervals when devices would get on the bus. Purists may argue that PCI is still theoretically not an isochronous bus, but as in most things in PC engineering, it is close enough.

[0006] Traditional High Speed Serial

[0007] Typical high speed serial bus operation on the other hand allows the possibility of all sizes of data transfers across the bus like PCI, but it certainly favors the very long bursts of data unlike PCI. The typical operation of a serial bus includes an extensive header of information for every data transaction on the bus much like Ethernet, which requires on the order of 68 bytes of header of information for every data transaction regardless of length. In other words, every data transaction on Ethernet would have to include 68 bytes of data along with the header information just to approach 50% utilization of the bus. As it turns out Ethernet also requires some guaranteed dead time between operations to "mostly" prevent collisions from other Ethernet devices on the widely dispersed bus, and that dead time further reduces the average performance.

[0008] The typical protocol for a serial bus is much the same as Ethernet with often much longer header information. Virtually all existing serial bus protocol implementations are very general and every block of data comes with everything needed to completely identify it. FiberChannel (FC) has such a robust protocol that virtually all other serial protocols can be transmitted across FC completely embedded within the FC protocol, sort of like including the complete family history along with object size, physical location within the room, room measurements, room number, street address, city, zip code, country, planet, galaxy, universe, ... etc. and of course all the same information about the destination location as well, even if all you want to do is move the object to the other side of the same room. Small transfers across many of these protocols, while possible, are extremely expensive from a bandwidth point of view and impractical in a bus applications where small transfers are common and would be disproportionately burdened with more high overhead than actual data transfer. Of course the possibility of isochronous operation on the more general serial bus is not very reasonable.

[0009] Recreating High Speed Serial for PCI

[0010] In creating the proprietary Split-Bridge TM technology, Mobility electronics of Phoenix Arizona, the present applicant, actually had to go back to the drawing board and design a far simpler serial protocol to allow a marriage to the PCI bus, because none of the existing implementations could coexist without substantial loss of performance. For a detailed discussion of Applicant's proprietary Split-Bridge TM technology, cross reference is made to Applicant's co-pending commonly assigned patent applications identified as serial number 09/130,057 and 09/130,058 both filed August 6, 1998, the teachings of each incorporated herein by reference. The Split-Bridge TM technology approach is

essentially custom fit for PCI and very extensible to all the other peripheral bus protocols under discussion like PCIx, and LDT™ set forth by AMD Corporation. LDT requires a clock link in addition to its data links, and is intended primarily as a motherboard application, wherein Split-Bridge™ technology is primarily intended to enable remote bus recreation. As the speeds of motherboard buses continue to grow faster, Split-Bridge™ can be readily adapted to support these by increasing the serial bus speed and adding multiple pipes. Split-Bridge™ technology fundamentals are a natural for extending anything that exists within a computer. It basically uses a single-byte of overhead for 32 bits of data and address - actually less when you consider that byte enables, which are not really "overhead", are included as well.

[0011] Armed with the far simpler protocol, all of the attributes of the PCI bus are preserved and made transparent across a high speed serial link at much higher effective bandwidth than any existing serial protocol. The net result is the liberation of a widely used general purpose bus, and the new found ability to separate what were previously considered fundamental inseparable parts of a computer into separate locations. When the most technical reviewers grasp the magnitude of the invention, then the wheels start to turn and the discussions that follow open up a new wealth of opportunities. It now becomes reasonable to explore some of the old fundamentals, like peer-to-peer communication between computers that has been part of the basic PCI specification from the beginning, but never really feasible because of the physical limits of the bus prior to Split-Bridge™ technology. The simplified single-byte overhead also enables very efficient high speed communication between two computers and could easily be extended beyond PCI.

[0012] The proprietary Split-Bridge TM technology is clearly not "just another high speed link" and distinguishing features that make it different represent novel approaches to solving some long troublesome system architecture issues.

[0013] First of all is the splitting of a PCI bridge into two separate and distinct pieces. Conceptually, a PCI bridge was never intended to be resident in two separate modules or chips and no mechanism existed to allow the sharing of setup information across two separate and distinct devices. A PCI bridge requires a number of programmable registers that supply information to both ports of a typical device. For the purpose of the following discussion, the two ports are defined into a north and south segment of the complete bridge.

[0014] The north segment is typically the configuration port of choice and the south side merely takes the information from the registers on the north side and operates accordingly. The problem exists when the north and south portions are physically and spatially separated and none of the register information is available to the south side because all the registers are in the north chip. A typical system solution conceived by the applicant prior to the invention of Split-Bridge TM technology would have been to merely create a separate set of registers in the south chip for configuration of that port. However, merely creating a separate set of registers in the south port would still leave the set up of those registers to the initialization code of the operating system and hence would have required a change to the system software.

[0015] Split-Bridge TM technology, on the other hand, chose to make the physical splitting of the bridge into two separate and spaced devices "transparent" to the system software (in other words, no knowledge to the system software that two devices were in

fact behaving as one bridge chip). In order to make the operations transparent, all accesses to the configuration space were encoded, serialized, and "echoed" across the serial link to a second set of relevant registers in the south side. Such transparent echo between halves of a PCI bridge or any other bus bridge is an innovation that significantly enhances the operation of the technology.

[0016] Secondly, the actual protocol in the Split-Bridge™ technology is quite unique and different from the typical state of the art for serial bus operations. Typically transfers are "packetized" into block transfers of variable length. The problem as it relates to PCI is that the complete length of a given transfer must be known before a transfer can start so the proper packet header may be sent.

[0017] Earlier attempts to accomplish anything similar to Split-Bridge™ technology failed because the PCI bus does not inherently know from one transaction to the next when, or if, a transfer will end or how long a block or burst of information will take. In essence the protocol for the parallel PCI bus (and all other parallel, and or real time busses for that matter) is incompatible with existing protocols for serial buses.

[0018] An innovative solution to the problem was to invent a protocol for the serial bus that more or less mimics the protocol on the PCI. With such an invention it is now possible to substantially improve the performance and real time operation here to for not possible with any existing serial bus protocol.

[0019] The 8 bit to 10 bit encoding of the data on the bus is not new, but follows existing published works. However, the direct sending of 32 bits of information along with the 4 bits of control or byte enables, along with an additional 4 bits of extension represents a 40 bit for every 36 bits of existing PCI data, address, and control or a flat

10% overhead regardless of the transfer size or duration, and this approach is new and revolutionary. Extending the 4 bit extension to 12 or more bits and including other functionality such as error correction or retransmit functionality is also within the scope of the Split-Bridge™ technology.

[0020] New Applications of the Split-Bridge™ Technology

[0021] Basic Split-Bridge™ technology was created for the purpose of allowing a low cost, high speed serial data communications between a parallel system bus and remote devices. By taking advantage of the standard and pervasive nature of the PCI bus in many other applications in computing, dramatic improvements in the price performance for other machines is realized. The present invention comprises a revolutionary application rendered possible due to the attributes of applicant's proprietary Split-Bridge™ technology.

SUMMARY

[0022] The present invention achieves technical advantages as a modular computer system having a universal connectivity station adapted to connect and route data via serial data links to a plurality of devices, these serial links and interfaces at each end thereof employing proprietary Split-Bridge™ technology disclosed and claimed in co-pending and commonly assigned patent applications identified as serial number 09/130,057 and 09/130,058, the teachings of which are incorporated herein by reference.

[0023] The present invention derives technical advantages as a modular computer system by separating into two or more spatially separate and distinct pieces, a computer core and a universal connectivity station (UCS). The core is the performance module of the modular computer system and may include some or all of the central processing unit

(CPU), memory, AGP Graphics, and System Bus Chip adapted to communicably couple these three together or in combination with other items. The UCS communicably couples the processor module via high speed serial links based on the proprietary Split-Bridge TM technology of Mobility Electronics of Phoenix Arizona, the applicant of the present invention, to other computers or to other individual modules such as storage modules including hard disk drives, a user interface module consisting of a keyboard, mouse, monitor and printer, as well as a LAN Module such as any Internet connection or another UCS, another UCS, audiovisual device, LAN storage just to name a few. In addition, the UCS is adapted to couple via a Split-Bridge TM technology serial link with a portable or handheld computer or device remotely located from the UCS but still functionally coupled to the modular computer system via the UCS. The UCS and associated Split-Bridge TM technology serial links are all transparent to the modules which can have parallel data busses including those based on PCI or Cardbus architectures.

[0024] The modular computer system of the present invention including the UCS is a novel approach to computer architecture and upgrade ability. Advantageously, the separate performance module may be selectively upgraded or modified as desired and as technology increases the performance of key components including microprocessor speed, standards, and architectures without necessitating the replacement or modification of the rest of the computer system. The UCS allows the performance module to be upgraded while the rest of the system devices coupled thereto do not need to be modified. Upgrading to single or multiple processors in the performance module or modules is readily possible. Whole organizations can standardize to a single UCS regardless of the type of performance or portability required by the users, thus addressing for the first time

the means of systems level support. In security sensitivity environments, it is possible to separate the "stored media" or computer central processor, or any other component of the system and connectivity from the operators, and still maintain the speed element so important in today's businesses.

BRIEF DESCRIPTION OF THE DRAWINGS

[0025] Figure 1 illustrates prior art computer systems depicted as a traditional performance desk top computer shown at 10, and a portable computing device 12, such as a notebook or laptop computer, mechanically coupled to mechanical docking station 14;

[0026] Figure 2 is a block diagram of a prior art bridge 16 used to couple two system computing buses, such as used between the portable computing device 12 and the mechanical docking station 14 shown in Figure 1;

[0027] Figure 3 illustrates the proprietary Split-Bridge TM technology serial communication technology of the applicant enabling high speed serial communications within the modular computer system of the present invention; and

[0028] Figure 4 is a block diagram of the modular computer system of the present invention utilizing a universal connectivity station (UCS) communicably coupled to a plurality of devices via serial links, such as the Split-Bridge TM technology serial links employed using fixed wire, optical, or wireless communication links.

DETAILED DESCRIPTION

[0029] Referring to Figure 3, there is depicted the proprietary Split-Bridge TM technology serial communications technology of the present applicant, discussed in great detail in commonly assigned US patent applications serial number 09/130,057 filed

August 6, 1998, and serial number 09/130,058 also filed August 6, 1998 the teachings of which are incorporated herein by reference.

[0030] Applicant Split-Bridge TM technology revolutionizes the status quo for computer systems. The Split-Bridge TM technology does not require the need for custom hardware or custom software to achieve full performance serial communication between devices, including devices having parallel data buses including the PCI bus. In fact, for each device in a modular computer system, the Split-Bridge TM technology appears just like a standard PCI bridge, and all software operating systems and device drivers already take such standard devices into consideration. By utilizing standard buses within each device operating within the modular computer system, each device does not require any additional support from the Operating System (OS) software. The modular computing system has simple elegance, allowing the PCI bus which is so pervasive in the computer industry, that possible applications of the initial PCI form of Split-Bridge TM technology are all most limitless.

[0031] Originally implemented in PCI, there is nothing fundamental that ties the Split-Bridge TM technology to PCI, and thus, the Split-Bridge TM technology can migrate as bus architectures grow and migrate. The 64 bit PCI is compatible with the Split-Bridge TM technology, as is future PCIx and/or LDT or other bus technologies that are currently under consideration in the industry and which are straight forward transitions of the Split-Bridge TM technology. Implementations with other protocols or other possible and natural evolutions of the Split-Bridge TM technology, including digital video (DV) technology that can be streamed over the high-speed serial link.

[0032] Referring to Figure 4, there is depicted at 20 a modular computer system according to one illustrative embodiment of the present invention. The modular computer system 20 is based around one or more universal connectivity stations generally shown at 22 each having a plurality of interface ports 24 which are preferably based on the proprietary Split-Bridge TM technology of the present applicant, Mobility Electronics of Phoenix Arizona. Each UCS 22 provides input/output, or I/O, capability of the computer or computer system 20, as well as modular expansion capability and features. UCS 22 includes all possible variations and combinations of port replication and connectivity, including but not limited to the following ports: P/S2, mouse and keyboard, serial, parallel, audio, USB, IEEE 1394, or firewire, SCSI, and the like. Each UCS 22 also includes the ability to expand the capability or features of the computer system 20 by adding any type of drive bays, including EIDE, USB, and 1394 CD Roms, DVD's, hard drives, tape back up's, ZIP drives®, Jazz® drives, and the like.

[0033] A plurality of interconnecting and interactive devices are communicably coupled to each UCS 22 via respective high speed serial links generally shown at 26 based on the proprietary Split-Bridge TM technology. In the hardwire embodiment, the serial links 26 comprise of a pair of simplex links forms a duplex link interconnecting each end of the Split-Bridge TM technology interfaces as shown. The serial links 26 may also employ optical fiber and optical transceivers if desired. The various modules making up modular computer system 20 may include, and a plurality of, but are not limited to, a memory/storage device 30, servers 32 having one or multiple processors and possibly serving other UCS's 22, as shown, and modular computer systems, remote users and so forth, a display 34, a portable computing device 36, such as a notebook computer,

a laptop computer, a portable digital assistant (FDA), and a remote wireless peripheral 38 which may interconnected via a wireless link shown at 40 and implementing the proprietary Split-Bridge TM technology. Examples of remote wireless terminals 38 may include 3rd generation (3G) devices now being developed and employed, including wireless personal devices having capabilities for voice, data, video and other forms of information which can be unidirectionally or bidirectionally streamed between the remote peripheral 38 and UCS 22. An appropriate antenna resides at each of the remote peripheral 38 and UCS 22 which are interconnected to respective transceivers communicably coupled to the respective ends of the Split-Bridge TM technology interfaces.

[0034] Moreover, multiple UCS's 22 can be integrated to communicate with each other via serially links 26, each UCS's 22 locally serving multiple modules. Multiple computers can be connected to a common UCS, or to multiple UCS's. For example, a computer or server room can have racks of computer processors or servers, each separately connected over a system of up to hundreds of feet, to one or many UCS's located throughout an office or other environment. This allows the desktop to have just a terminal or whatever capabilities the IT manager desires, enhancing security and control.

[0035] System 20 also provides the ability to simultaneously connect multiple computers 36 and allows full peer-to-peer communications, allowing the processor module (CPU) 42 to communicate with the portable device computer 36 or to the computer room computers 32, allowing all of these computers to share information and processing capability. This also allows certain of the computers, such as the portable

computer 36, to upgrade its processing capability when it is connected to the UCS 22 with other higher capability computers.

[0036] Still referring to Figure 4, the modular computer system 20 of the present invention further comprises a processor module 42, which may be remotely positioned from the UCS 22, but for purposes of inclusion, could internally reside with the UCS 22. The processor module 42, from a performance point of view, is the heart and sole of the modular computer system 20 and can be made up of one or more core parts including: the CPU, memory, APG Graphics, and a system bus interface to connect the other 3 together. The processor module 42 operates in conjunction with memory such as a hard disk drive, which can reside within the processor module 42, or be remotely located as shown at 30 if desired. The APG Graphics could be located separately within the system and interconnected via a serial link 26, or even located within UCS 22 if desired.

[0037] Advantageously, the processor module 42 which may comprise of a high speed microprocessor or microprocessors, digital signal processors (DSP's), and can be upgraded or interchanged from the systems 20 without effecting the other devices or operation of the system, thereby permitting increased performance at a very low cost. Computers today typically require the replacement or upgrading of other devices when the performance portion of the computer system is replaced. The modular computer system 20 of the present invention revolutionizes the computer architectures available by separating out the processor module 42 from the rest of the computer system 20. Each of the modules 30,32,34,36, and 38 all have functional access and use of the processor module 42 via the UCS 22 over the respective serial links 26 and 40, and from a performance point of view, appear to each of these devices to be hardwired to the

processor module 42. That is, the Split-Bridge™ technology links interconnecting each of the devices via the UCS 22 to the processor module 42 is transparent to each device, thus requiring no change to the OS of each device, the format of data transfer therebetween, or any other changes. This is rendered possible by the revolutionary Split-Bridge™ technology.

[0038] Another advantage of computer system 20 is that the data module 30 may be customized, portable, and used only by one user. This allows the user to take the portable module 30 with them from location to location, system 20 to system 20. The data module 30 can store each user's unique information, and can be accessed and used on any processor module 42 and UCS 22.

[0039] As discussed in considerable detail in the cross-referenced and commonly assigned patent applications, the Split-Bridge™ technology provides that information from the parallel buses of each device be first loaded into first-in first-out (FIFO) registers before being serialized into frames for transmission over the high speed serial link. Received frames are deserialized and loaded into FIFO registers at the other end thereof, such as UCS 22, for being placed onto the destination bus of the opposing device. Interrupts, error signals and status signals are sent along the serial link. Briefly, the proprietary Split-Bridge™ technology takes address and data from a bus, one transaction at a time, together with 4 bits that act either as control or byte enable signals. Two or more additional bits may be added to tag each transaction as either an addressing cycle, an acknowledging of a non-posted write, a data burst, end of data burst or cycle. If these transactions are posted writes they can be rapidly stored in a FIFO register before being encoded into a number of frames that are sent serially over the link. When pre-

fetches reads are allowed, the FIFO register can store pre-fetched data in case the initiator requests it. For single cycle writes or other transactions that must await a response, the bridge can immediately signal the initiator to retry the request, even before the request is passed to the target.

[0040] In the preferred embodiment of the modular computer system of the present invention, one or more of the busses in the plurality of devices, as well as in the UCS 22, employ the PCI or PCMCIA standard, although it is contemplated that other bus standards can be used as well. The preferred Split-Bridges™ technology operates with a plurality of configuration registers that is loaded with information specified under the PCI standard. The Split-Bridges™ technology transfers information between busses depending on whether the pending address falls within a range embraced by the configuration registers. This scheme works with devices on the other side of the Split-Bridge™ technology, which can be given unique base addresses to avoid addressing conflicts.

[0041] As disclosed in great detail in the co-pending and cross-referenced commonly assigned patent applications, the Split-Bridges™ technology may be formed as two separate application-specific integrated circuits (ASICs) joined by a duplex link formed as a pair of simplex links. Preferably, these two integrated ASICs have the same structure, but can act in two different modes in response to a control signal applied to one of its pins. Working with hierarchical busses (primary and secondary busses) these integrated circuits are placed in a mode appropriate for its associated bus. The ASIC associated with the secondary bus preferably has an arbitrator that can grant masters control of the secondary bus. The ASIC can also supply a number of ports to support

other devices such as a USB and generic configurable I/O ports, as well as parallel and serial ports.

[0042] The UCS preferably comprises a PCI bus having a plurality of PC card slots located with the UCS housing. Each PC card slot is provided with a Split-Bridge TM technology interface, and preferably one of the ASICs assembled with a standardized serial connector comprising at least 4 pins, as depicted in the cross referenced commonly assigned patent applications, the teachings of which are incorporated herein by reference.

[0043] The modular computer system 20 of the present invention derives technical advantages in that the UCS station 22 with its associated interface cards and parallel data bus interconnecting each interface card, is truly functionally transparent to each of the interconnected modules including the memory storage device 30, the server 32, the display 34, the portable computing device 36, the remote wireless peripheral 38, and the processor module 42. This integration of devices into a modular computer system has truly enormous potential and uses depending on the desired needs and requirements of one's computing system. However, the physical location and proximity of each of the devices forming the modular computer system are no longer strictly limited due to the high speed serial interconnection links of the proprietary Split-Bridge TM technology. Each of the devices can be remotely located, or located in proximity to one another as desired. For instance, the display 34 and portable computing device 36 may be resident within one's office, with the UCS 22 in another room, and with the memory storage device 30, server 32, and performance module 42 remotely located in yet still another room or location. Moreover, a plurality of portable computing devices 36 can all be remotely located from UCS 22, and from each other, allowing networking to modular

system 20 either through wireless serial links as depicted at 26, or wirelessly as depicted at 40.

[0044] The proprietary Split-Bridge TM technology presently allows for extended communication distances of 5 meters, but through advancement in technology can continue to be extended. For instance, using optical communication links in place of copper wire simplex links, along with suitable optical transceivers, can yield links that are exceptionally long. Using wireless technology, as depicted at 40, allows a remote peripheral 38 to be located perhaps anywhere in the world, such as by implementing repeaters incorporating the proprietary Split-bridge TM technology high speed serial communication technology. Additional techniques can be used by slowing the transfer rate, and increasing the number of pipes, to achieve link distances of hundreds of feet, and allowing the use of CAT5 cable.

[0045] Though the invention has been described with respect to a specific preferred embodiment, many variations and modifications will become apparent to those skilled in the art upon reading the present application. It is therefore the intention that the appended claims be interpreted as broadly as possible in view of the prior art to include all such variations and modifications.

CLAIMS

What is claimed is:

1. A computing module comprising:
a processor;
a parallel system bus; and
an interface configured to asynchronously, serially exchange parallel system bus data with one or more other modules of a computer system that includes the computing module.
2. The computing module as recited in claim 1, wherein the interface comprises a bridge.
3. The computing module as recited in claim 1, wherein the interface is further configured to asynchronously, serially exchange the parallel system bus data without requiring handshaking.
4. The computing module as recited in claim 1, wherein the computing module is separated from each of the one or more other modules of the computer system by a distance of at least a meter.
5. The computing module as recited in claim 1, wherein each of the one or more other modules comprises a module selected from a group including: a disk drive, a

keyboard, a mouse, a monitor, a printer, an Internet connection, a wireless accessory, and a storage module.

6. A method comprising,:

receiving, at a first module, first parallel bus data;

asynchronously, serially transferring the first parallel bus data to a second module via a serial link;

receiving, at the second module, second parallel bus data; and

asynchronously, serially transferring the second parallel bus data to the first module via the serial link.

7. The method as recited in claim 6, wherein the asynchronously, serially transferring the first parallel bus data comprises asynchronously, serially transferring the first parallel bus data without requiring handshaking.

8. The method as recited in claim 6, wherein the first module comprises a processor module including a CPU and memory, and wherein the second module comprises a peripheral device.

9. The method as recited in claim 8, wherein the peripheral device comprises a hard drive.

10. The method as recited in claim 6, wherein the first module is separated from the second module by a distance of at least a meter.

11. The method as recited in claim 6, wherein the first module and the second module each comprises a portable computing device.

12. The method as recited in claim 6, wherein the first module comprises one of: a disk drive, a keyboard, a mouse, a monitor, a printer, an Internet connection, a wireless accessory, and a storage module.

13. A method in a first module of a computer system including the first module and a second module coupled together via a serial link, the method comprising:

receiving first parallel bus data;

asynchronously, serially transferring the first parallel bus data to the second module via the serial link; and

asynchronously, serially receiving second parallel bus data from the second module via the serial link.

14. The method as recited in claim 13, wherein the asynchronously, serially transferring the first parallel bus data comprises asynchronously, serially transferring the first parallel bus data without requiring handshaking.

15. The method as recited in claim 13, wherein the first module is separated from the second module by a distance of at least several meters.

16. The method as recited in claim 13, wherein the first module and the second module each comprises a portable computing device.

17. The method as recited in claim 13, wherein the second module comprises one of: a disk drive, a keyboard, a mouse, a monitor, a printer, an Internet connection, a wireless accessory, and a storage module.

18. The method as recited in claim 13, wherein the first module comprises a processor module including a CPU and memory, and wherein the second module comprises a peripheral device.

19. The method as recited in claim 13, wherein the first module comprises a hard drive.

20. The method as recited in claim 13, wherein the first module comprises a memory device.

ABSTRACT OF THE DISCLOSURE

A computing module includes an interface to asynchronously, serially exchange parallel system bus data with one or more other modules of a computer system that includes the computing module. The computing module can asynchronously, serially transfer first parallel bus data to another module of the computer system, and can asynchronously, serially receive second parallel bus data from another module of the computer system.

Application Data Sheet

Application Information

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Filing Date:

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Suggested Group Art Unit:

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Representative Information

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Domestic Priority Information

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This Application	Continuation of	11/300,131	12/13/2005
11/300,131	Continuation of	09/559,678	04/27/2000
09/559,678	Application claiming the benefit under 35 USC 119(e)	60/198,317	04/19/2000
09/559,678	Continuation-in-part of	09/130,057	08/06/1998
09/559,678	Continuation-in-part of	09/130,058	08/06/1998

Foreign Priority Information

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

I hereby appoint:

☒ Practitioners associated with the Customer Number: 75671

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) to:

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OR

☐ Firm or Individual Name			
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United States of America

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	12 DEC 2008
Name	Julia Cefalo	Telephone	
Title	Authorized Person for Tao Logic Systems LLC		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

STATEMENT UNDER 37 CFR 3.73(b)Applicant/Patent Owner: Tao Logic Systems LLCApplication No./Patent No.: 11/300,131 Filed/Issue Date: December 13, 2005Entitled: Computing Module with Serial Data ConnectivityTao Logic Systems LLC, a Corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☒ the assignee of the entire right, title, and interest; or
2. ☐ an assignee of less than the entire right, title and interest
(The extent (by percentage) of its ownership interest is _____ %)

in the patent application/patent identified above by virtue of either:

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

OR

B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

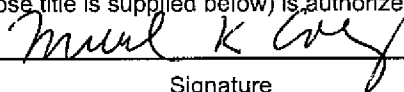
1. From: Frank W. Ahern To: Mobility Electronics
The document was recorded in the United States Patent and Trademark Office at
Reel 010974, Frame 0126, or for which a copy thereof is attached.
2. From: Mobility Electronics To: Tao Logic Systems LLC
The document was recorded in the United States Patent and Trademark Office at
Reel 016674, Frame 0720, or for which a copy thereof is attached.
3. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet.

☐ As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.



Signature

Michael K. Colby

Printed or Typed Name

Attorney of Record, Reg# 45,816

Title

15 JAN 09

Date

509-755-7262

Telephone Number

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

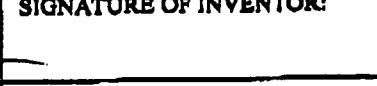
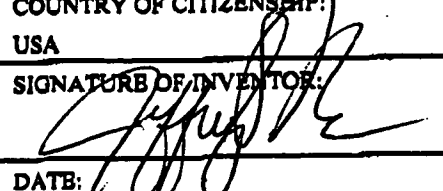
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

APPLICATION FOR UNITED STATES PATENT

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I declare that my residence, post office address and citizenship are as stated below next to my name; that I verily believe that I am the original, first and sole inventor if only one name is listed below, or an original, first and joint inventor if plural inventors are named below, of the subject matter which is claimed and for which a patent is sought on the invention entitled as set forth below, which is described in the attached specification; that I have reviewed and understand the contents of the specification, including the claims, as amended by any amendment specifically referred to in the oath or declaration; that no application for patent or inventor's certificate on this invention has been filed by me or my legal representatives or assigns in any country foreign to the United States of America; and that I acknowledge my duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, section 1.56(a);

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

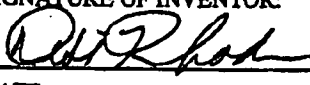
TITLE OF INVENTION:			MODULAR COMPUTER SYSTEM
POWER OF ATTORNEY:			I HEREBY APPOINT THE FOLLOWING ATTORNEYS TO PROSECUTE THIS APPLICATION AND TRANSACT ALL BUSINESS IN THE PATENT AND TRADEMARK OFFICE CONNECTED THEREWITH
Robert C. Klinger, Reg. No. 34,365 Key Houston, Reg. No. 38,495			Stott B. Stahl, Reg. No. 33,795 Bobby D. Slaton, Reg. No. 43,130
Steven W. Thrasher, Reg. No. 43,192			
SEND CORRESPONDENCE TO: Robert C. Klinger Jackson Walker, LLP 2435 North Central Expressway, Suite 600 Richardson, TX 75080		DIRECT TELEPHONE CALLS TO: Robert C. Klinger 972-744-2902	
NAME OF INVENTOR: (1) Frank W. Ahern	NAME OF INVENTOR: (2) Desi Rhoden	NAME OF INVENTOR: (3) Jeff Doss	
RESIDENCE (City and State Only) Scottsdale, Arizona	RESIDENCE (City and State Only) Phoenix, Arizona	RESIDENCE (City and State Only) Phoenix, Arizona	
POST OFFICE ADDRESS 6233 East Janiceway Scottsdale, Arizona 85254	POST OFFICE ADDRESS 3412 East Suncrust Court Phoenix, Arizona 85044	POST OFFICE ADDRESS 18652 North 39 th Street Phoenix, Arizona 85050	
COUNTRY OF CITIZENSHIP: USA	COUNTRY OF CITIZENSHIP: USA	COUNTRY OF CITIZENSHIP: USA	
SIGNATURE OF INVENTOR: 	SIGNATURE OF INVENTOR: 	SIGNATURE OF INVENTOR: 	
DATE: 4-27-00	DATE:	DATE: 4-27-00	

ATTORNEY'S DOCKET NO.
101950-00011

APPLICATION FOR UNITED STATES PATENT
DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I declare that my residence, post office address and citizenship are as stated below next to my name; that I verily believe that I am the original, first and sole inventor if only one name is listed below, or an original, first and joint inventor if plural inventors are named below, of the subject matter which is claimed and for which a patent is sought on the invention entitled as set forth below, which is described in the attached specification; that I have reviewed and understand the contents of the specification, including the claims, as amended by any amendment specifically referred to in the oath or declaration; that no application for patent or inventor's certificate on this invention has been filed by me or my legal representatives or assigns in any country foreign to the United States of America; and that I acknowledge my duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, section 1.56(a);

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

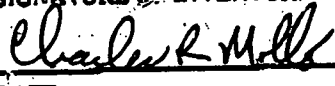
TITLE OF INVENTION:		MODULAR COMPUTER SYSTEM	
POWER OF ATTORNEY:		I HEREBY APPOINT THE FOLLOWING ATTORNEYS TO PROSECUTE THIS APPLICATION AND TRANSACT ALL BUSINESS IN THE PATENT AND TRADEMARK OFFICE CONNECTED THEREWITH	
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NAME OF INVENTOR: (1) Frank W. Ahern	NAME OF INVENTOR: (2) Desi Rhoden	NAME OF INVENTOR: (3) Jeff Doss	
RESIDENCE (City and State Only) Scottsdale, Arizona	RESIDENCE (City and State Only) Phoenix, Arizona	RESIDENCE (City and State Only) Phoenix, Arizona	
POST OFFICE ADDRESS 6233 East Janiceway Scottsdale, Arizona 85254	POST OFFICE ADDRESS 3412 East Suncrest Court Phoenix, Arizona 85044	POST OFFICE ADDRESS 18652 North 39 th Street Phoenix, Arizona 85050	
COUNTRY OF CITIZENSHIP: USA	COUNTRY OF CITIZENSHIP: USA	COUNTRY OF CITIZENSHIP: USA	
SIGNATURE OF INVENTOR:	SIGNATURE OF INVENTOR: 	SIGNATURE OF INVENTOR:	
DATE:	DATE: 4-27-2000	DATE:	

APPLICATION FOR UNITED STATES PATENT

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I declare that my residence, post office address and citizenship are as stated below next to my name; that I verily believe that I am the original, first and sole inventor if only one name is listed below, or an original, first and joint inventor if plural inventors are named below, of the subject matter which is claimed and for which a patent is sought on the invention entitled as set forth below, which is described in the attached specification; that I have reviewed and understand the contents of the specification, including the claims, as amended by any amendment specifically referred to in the oath or declaration; that no application for patent or inventor's certificate on this invention has been filed by me or my legal representatives or assigns in any country foreign to the United States of America; and that I acknowledge my duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, section 1.56(a);

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

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POWER OF ATTORNEY:		I HEREBY APPOINT THE FOLLOWING ATTORNEYS TO PROSECUTE THIS APPLICATION AND TRANSACT ALL BUSINESS IN THE PATENT AND TRADEMARK OFFICE CONNECTED THEREWITH
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Steven W. Thrasher, Reg. No. 43,192		
SEND CORRESPONDENCE TO: Robert C. Klinger Jackson Walker, LLP 2435 North Central Expressway, Suite 600 Richardson, TX 75080		DIRECT TELEPHONE CALLS TO: Robert C. Klinger 972-744-2902
NAME OF INVENTOR: (4)	NAME OF INVENTOR: (5)	NAME OF INVENTOR: (6)
Charles Mollo		
RESIDENCE (City and State Only) Phoenix, Arizona	RESIDENCE (City and State Only)	RESIDENCE (City and State Only)
POST OFFICE ADDRESS 13602 N. 44 th St. #181 Phoenix, Arizona 85032	POST OFFICE ADDRESS	POST OFFICE ADDRESS
COUNTRY OF CITIZENSHIP: USA	COUNTRY OF CITIZENSHIP:	COUNTRY OF CITIZENSHIP:
SIGNATURE OF INVENTOR: 	SIGNATURE OF INVENTOR:	SIGNATURE OF INVENTOR:
DATE: 4-27-00	DATE:	DATE:

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Frank W. Ahern et al.	Examiner:	Unknown
Serial No.:	Unknown	Group Art Unit:	Unknown
Filed:	December 22, 2009	Docket:	TALS0090
Title:	Computing Module with Serial Data Connectivity		

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with 37 C.F.R. §§ 1.97 *et. seq.*, the referenced materials are brought to the attention of the Examiner for consideration in connection with the above-identified patent application. Applicants respectfully request that this Supplemental Information Disclosure Statement be entered and the documents listed on the attached Form 1449 be considered by the Examiner and made of record. Pursuant to the provisions of MPEP 609, Applicants request that a copy of the 1449 form, initialed as being considered by the Examiner, be returned to the Applicants with the next official communication.

Pursuant to 37 C.F.R. §1.97(b), it is believed that no fee or statement is required with the Supplemental Information Disclosure Statement. However, if an Office Action on the merits has been mailed, the Commissioner is hereby authorized to charge the required fees to Deposit Account No. 50-4143 in order to have this Supplemental Information Disclosure Statement considered.

Pursuant to 37 C.F.R. §1.98(d), copies of all of the listed documents are not provided as these references were previously cited by or submitted to the U.S. Patent Office in connection with Applicants' prior U.S. application, Serial No. 11/300,131, filed on December 13, 2005, which is relied upon for an earlier filing date under 35 U.S.C. §120. Additionally, certain of the references are not in the English language. These references not in the English language are believed to be relevant due to their having been cited in U.S. Application Serial No. 11/300,131.

Pursuant to 37 C.F.R. 1.98(a)(2), Applicant believes that copies of cited U.S. Patents and Published Applications are no longer required to be provided to the Office. Notification of this change was provided in the United States Patent and Trademark Office OG Notices dated

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Serial No :Unknown

Filing Date: Unknown

Title: Computing Module with Serial Data Connectivity

Page 2

Dkt: TALS0090

October 12, 2004. Thus, Applicant has not included copies of any US Patents or Published Applications cited with this submission. Should the Office require copies to be provided, Applicant respectfully requests that notice of such requirement be directed to Applicant's below-signed representative. Applicant acknowledges the requirement to submit copies of foreign patent documents and non-patent literature in accordance with 37 C.F.R. 1.98(a)(2).

Respectfully submitted,

FRANK W. AHERN ET AL.

By their Representatives,

Date December 22, 2009

By /Allan T. Sponseller, Reg. #38,318/

Allan T. Sponseller

Reg. No. 38,318

Electronic Acknowledgement Receipt

EFS ID:	6689124
Application Number:	12644511
International Application Number:	
Confirmation Number:	6489
Title of Invention:	A Computing Module with Serial Data Connectivity
First Named Inventor/Applicant Name:	Frank W. Ahern
Customer Number:	75671
Filer:	William Breen/Kenneth Linder
Filer Authorized By:	William Breen
Attorney Docket Number:	TALS0090
Receipt Date:	22-DEC-2009
Filing Date:	
Time Stamp:	14:38:00
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$ 1090
RAM confirmation Number	1189
Deposit Account	504143
Authorized User	SADLER,LANCE R.

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		TALS0090Application.pdf	173343	yes	23
			6d6eca298f98e1823b0921516e44f8b8880edcdf		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	18	
	Claims		19	22	
	Abstract		23	23	
Warnings:					
Information:					
2	Application Data Sheet	TALS0090ADS.pdf	51774	no	4
			1d31849a4724176b77770be53be19af0e137aa5c		
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
3		TALS0044POA.pdf	127001	yes	2
			79c5dc7f9387f4a38e46e1aeecd1b361f961aadc		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Power of Attorney		1	1	
	Assignee showing of ownership per 37 CFR 3.73(b).		2	2	
Warnings:					
Information:					
4	Oath or Declaration filed	TALS0044Declaration.pdf	180700	no	3
			f4c251aa2fbdd15d37b30f4353d0b099bdc066b94		
Warnings:					
Information:					

5		TALS0090IDS.pdf	258202	yes	12
			301c33010fbd840c495c3f4a3d99acbd82380c3a		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Transmittal Letter		1	2	
	Information Disclosure Statement (IDS) Filed (SB/08)		3	12	
Warnings:					
Information:					
6	NPL Documents	11300131NOA102209.pdf	194288	no	4
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Warnings:					
Information:					
7	NPL Documents	11300131NOA120409.pdf	194672	no	4
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Warnings:					
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8	NPL Documents	20091124NOA.pdf	67714	no	1
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9	NPL Documents	TALS0044AllowedClaims.pdf	66115	no	7
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14	NPL Documents	TALS0044NOA061809.pdf	189479 8c5c707b5470d45a55f77c9cf4a41dc1559263a1	no	4
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Information:					
15	Drawings-only black and white line drawings	TALS0090Drawings.pdf	31312 ff40e3ab9f4ea3233437b9b4d0493c2933a22aba	no	2
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Information:					
16	Fee Worksheet (PTO-875)	fee-info.pdf	32704 828214cbf8da9235888a0ca3a9d8fb88dcccde361	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			2682649		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

Filing Date: 12/22/09

Approved for use through 7/31/2006. OMB 0651-0032

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 12/644,511	
APPLICATION AS FILED – PART I						
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A		N/A	330
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A		N/A	540
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A		N/A	220
TOTAL CLAIMS (37 CFR 1.16(i))	20	minus 20 =	x\$26		x\$52	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 =	x\$110		x\$220	
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$270 (\$135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR					
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))			195		390	
			TOTAL		TOTAL	1090
* If the difference in column 1 is less than zero, enter "0" in column 2.						
APPLICATION AS AMENDED – PART II						
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OTHER THAN SMALL ENTITY
	Total (37 CFR 1.16(i))	Minus	**	=	X =	X =
	Independent (37 CFR 1.16(h))	Minus	***	=	X =	X =
	Application Size Fee (37 CFR 1.16(s))					
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))			N/A		N/A
			TOTAL		TOTAL	
			ADD'T FEE		ADD'T FEE	
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OTHER THAN SMALL ENTITY
	Total (37 CFR 1.16(i))	Minus	**	=	X =	X =
	Independent (37 CFR 1.16(h))	Minus	***	=	X =	X =
	Application Size Fee (37 CFR 1.16(s))					
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))			N/A		N/A
			TOTAL		TOTAL	
			ADD'T FEE		ADD'T FEE	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.						

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.