

IMAGE SENSOR

Frame grabber cables

A8406 series

Various types of cables for frame grabber

A flat panel sensor adopting parallel video output requires a frame grabber cable for transmitting the digital video data to a frame grabber card installed in PC.

Frame grabber cables A8406 series are cables that connect the flat panel sensor to a frame grabber.

A8406 series have high performance and high reliability as digital video cables, and they are also designed for EMC conformity. The wires are covered by double shielding and they have ferrite cores.

Refer to the datasheet for the flat panel sensor and choose a suitable cable for it.

■ Selection guide

Frame grabber	Cable type No.	Cable length	Cable end	
General-purpose	A8406-31	5 m	TX20A-36PH1-D2P1-D1E *2	open
	A8406-36	7 m		
	A8406-37	10 m		
	A8406-38	12 m		
	A8406-41	5 m	PCS-E80FA *3	
	A8406-46	7 m		
	A8406-47	10 m		
	A8406-48	12 m		
	A8406-51	5 m	10140-6000EL *4	
	A8406-56	7 m		
	A8406-57	10 m		
	A8406-58	12 m		
IMAQ PCI-1424 *1 IMAQ PCI-1422 *1	A8406-32	5 m	TX20A-36PH1-D2P1-D1E *2	PCS-XE100MA+ *3
	A8406-33	7 m		
	A8406-34	10 m		
	A8406-35	12 m		
	A8406-42	5 m	PCS-E80FA *3	
	A8406-43	7 m		
	A8406-44	10 m		
	A8406-45	12 m		
	A8406-52	5 m	10140-6000EL *4	
	A8406-53	7 m		
	A8406-54	10 m		
	A8406-55	12 m		
	A8406-62	5 m	PCS-XE68MA+ *3	
	A8406-64	10 m		

*1: Made by NI (National Instrument Corporation)

*2: Made by JAE (Japan Aviation Electronics Industry, Limited)

*3: Made by Honda Tsushin Kogyo Co. Ltd.

*4: Made by 3M Co. Ltd.

Frame grabber cables **A8406 series**

Cable for general frame grabber **A8406-31/-36/-37/-38**

A8406-31/-36/-37/-38 are cables that connect the flat panel sensor to a general frame grabber. One end of this cable has a 36-pin plug mating with the flat panel sensor digital output receptacle, but the other end is left open. Connect the open end to a plug that mates with the frame grabber to be used.

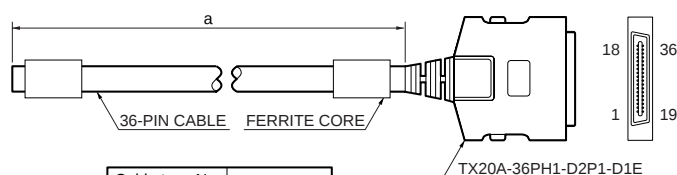
■ Cable color coding and specifications

Pin No.	Signal	Cable color	Marking color	Pin No.	Signal	Cable color	Marking color
1	Data12+ (MSB)	Blue	-	19	Data12- (MSB)	Orange	-
2	Data11+	Green	-	20	Data11-	Brown	-
3	Data10+	Gray	-	21	Data10-	Red	-
4	Data9+	Black	-	22	Data9-	Yellow	-
5	Data8+	Pink	-	23	Data8-	Purple	-
6	Data7+	White	-	24	Data7-	Blue	Red (1)
7	Data6+	Orange	White (1)	25	Data6-	Green	White (1)
8	Data5+	Brown	White (1)	26	Data5-	Gray	White (1)
9	Data4+	Red	White (1)	27	Data4-	Black	White (1)
10	Data3+	Yellow	Black (1)	28	Data3-	Pink	Black (1)
11	Data2+	Purple	White (1)	29	Data2-	White	Blue (1)
12	Data1+ (LSB)	Blue	Red (2)	30	Data1- (LSB)	Orange	White (2)
13	Reserved *5	Green	White (2)	31	GND	Brown	White (2)
14	Reserved *5	Gray	White (2)	32	GND	Red	White (2)
15	ExtTrgGrb (TTL)	Black	White (2)	33	IntExt (TTL)	Yellow	Black (2)
16	Vsync+	Pink	Black (2)	34	Vsync-	Purple	White (2)
17	Hsync+	White	Blue (2)	35	Hsync-	Blue	Black (1)
18	Pclk+	Orange	Black (1)	36	Pclk-	Green	Black (1)

Note) Numbers in parentheses of "Marking color" item show marking number.

*5: The signals connected to these pins depend on each devices. Refer to the datasheet for the flat panel sensor.

■ Dimensional outline (unit: mm)



Cable type No.	a
A8406-31	5000 ± 140
A8406-36	7000 ± 140
A8406-37	10000 ± 200
A8406-38	12000 ± 200

Frame grabber cables **A8406 series**

Cable for general frame grabber **A8406-41/-46/-47/-48**

A8406-41/-46/-47/-48 are cables that connect the flat panel sensor to a general frame grabber. One end of this cable has a 80-pin plug mating with the flat panel sensor digital output receptacle, but the other end is left open. Connect the open end to a plug that mates with the frame grabber to be used.

■ Cable color coding and specifications

Pin No.	Signal	Cable color	Marking color	Pin No.	Signal	Cable color	Marking color
1	A_Data1+ (LSB)	Blue	-	41	B_Data1+ (LSB)	Pink	Red (1)
2	A_Data1- (LSB)	Orange	-	42	B_Data1- (LSB)	Purple	Black (1)
3	A_Data2+	Green	-	43	B_Data2+	White	Black (1)
4	A_Data2-	Brown	-	44	B_Data2-	Blue	Black (2)
5	A_Data3+	Gray	-	45	B_Data3+	Orange	Black (2)
6	A_Data3-	Red	-	46	B_Data3-	Green	Black (2)
7	A_Data4+	Black	-	47	B_Data4+	Brown	Black (2)
8	A_Data4-	Yellow	-	48	B_Data4-	Gray	Black (2)
9	A_Data5+	Pink	-	49	B_Data5+	Red	Black (2)
10	A_Data5-	Purple	-	50	B_Data5-	Yellow	Red (2)
11	A_Data6+	White	-	51	B_Data6+	Pink	Red (2)
12	A_Data6-	Blue	Red (1)	52	B_Data6-	Purple	Yellow (2)
13	A_Data7+	Orange	White (1)	53	B_Data7+	White	Yellow (1)
14	A_Data7-	Green	White (1)	54	B_Data7-	Blue	Yellow (1)
15	A_Data8+	Blown	White (1)	55	B_Data8+	Orange	Yellow (1)
16	A_Data8-	Gray	White (1)	56	B_Data8-	Green	Yellow (1)
17	A_Data9+	Red	White (1)	57	B_Data9+	Brown	Yellow (1)
18	A_Data9-	Black	White (1)	58	B_Data9-	Gray	Yellow (1)
19	A_Data10+	Yellow	Black (1)	59	B_Data10+	Red	Yellow (1)
20	A_Data10-	Pink	Black (1)	60	B_Data10-	Yellow	Blue (1)
21	A_Data11+	Purple	White (1)	61	B_Data11+	Pink	Yellow (1)
22	A_Data11-	White	Blue (1)	62	B_Data11-	Purple	Yellow (1)
23	A_Data12+ * ⁶	Blue	Red (2)	63	B_Data12+ * ⁶	White	Yellow (2)
24	A_Data12- * ⁶	Orange	White (2)	64	B_Data12- * ⁶	Blue	Orange (1)
25	A_Data13+	Green	White (2)	65	B_Data13+	Orange	Yellow (2)
26	A_Data13-	Brown	White (2)	66	B_Data13-	Green	Yellow (2)
27	A_Data14+ * ⁷	Gray	White (2)	67	B_Data14+ * ⁷	Brown	Yellow (2)
28	A_Data14- * ⁷	Red	White (2)	68	B_Data14- * ⁷	Gray	Yellow (2)
29	Reserved	Black	White (2)	69	Reserved	Red	Orange (1)
30	Reserved	Yellow	Black (2)	70	Reserved	Yellow	Blue (2)
31	Reserved	Pink	Black (2)	71	Reserved	Pink	Yellow (2)
32	Reserved	Purple	White (2)	72	Reserved	Purple	Blue (2)
33	IntExt (TTL)	White	Blue (2)	73	ExtTrgGrb (TTL)	White	Orange (1)
34	Reserved	Blue	Black (1)	74	Reserved	Blue	Orange (2)
35	Vsync+	Orange	Black (1)	75	Reserved * ⁸	Green	Orange (1)
36	Vsync-	Green	Black (1)	76	Reserved	Brown	Orange (1)
37	Hsync+	Brown	Black (1)	77	Reserved * ⁸	Gray	Orange (1)
38	Hsync-	Gray	Black (1)	78	Reserved	Red	Orange (2)
39	Pclk+	Red	Black (1)	79	GND	Pink	Orange (1)
40	Pclk-	Yellow	Red (1)	80	GND	Purple	Orange (1)

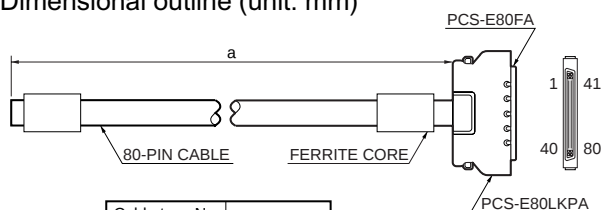
Note) Numbers in parentheses of "Marking color" item show marking number.

*6: MSB for 12 bit

*7: MSB for 14bit

*8: The signals connected to these pins depend on each devices. Refer to the datasheet for the flat panel sensor.

■ Dimensional outline (unit: mm)



Frame grabber cables **A8406 series**

Cable for general frame grabber **A8406-51/-56/-57/-58**

A8406-51/-56/-57/-58 are cables that connect the flat panel sensor to a general frame grabber. One end of this cable has a 40-pin plug mating with the flat panel sensor digital output receptacle, but the other end is left open. Connect the open end to a plug that mates with the frame grabber to be used.

■ Cable color coding and specifications

Pin No.	Signal	Cable color	Marking color	Pin No.	Signal	Cable color	Marking color
1	Data1+ (LSB)	Blue	-	21	Data1- (LSB)	Orange	-
2	Data2+	Green	-	22	Data2-	Brown	-
3	Data3+	Gray	-	23	Data3-	Red	-
4	Data4+	Black	-	24	Data4-	Yellow	-
5	Data5+	Pink	-	25	Data5-	Purple	-
6	Data6+	White	-	26	Data6-	Blue	Red (1)
7	Data7+	Orange	White (1)	27	Data7-	Green	White (1)
8	Data8+	Brown	White (1)	28	Data8-	Gray	White (1)
9	Data9+	Red	White (1)	29	Data9-	Black	White (1)
10	Data10+	Yellow	Black (1)	30	Data10-	Pink	Black (1)
11	Data11+	Purple	White (1)	31	Data11-	White	Blue (1)
12	Data12+ ^{*9}	Blue	Red (2)	32	Data12- ^{*9}	Orange	White (2)
13	Data13+	Brown	Black (1)	33	Data13-	Gray	Black (1)
14	Data14+ ^{*10}	Red	Black (1)	34	Data14- ^{*10}	Yellow	Red (1)
15	Reserved ^{*11}	Green	White (2)	35	GND	Brown	White (2)
16	Reserved ^{*11}	Gray	White (2)	36	GND	Red	White (2)
17	ExtTrgGrb (TTL)	Black	White (2)	37	IntExt (TTL)	Yellow	Black (2)
18	Vsync+	Pink	Black (2)	38	Vsync-	Purple	White (2)
19	Hsync+	White	Blue (2)	39	Hsync-	Blue	Black (1)
20	Pclk+	Orange	Black (1)	40	Pclk-	Green	Black (1)

Note) Numbers in parentheses of "Marking color" item show marking number.

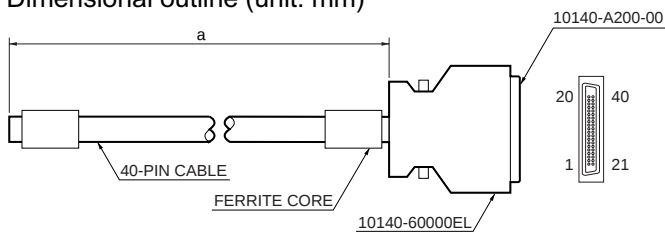
Unless otherwise is not described, signal level is LVDS

*9: MSB for 12 bit

*10: MSB for 14 bit

*11: The signals connected to these pins depend on each devices. Refer to the datasheet for the flat panel sensor.

■ Dimensional outline (unit: mm)



Cable type No.	a
A8406-51	5000 ± 140
A8406-56	7000 ± 140
A8406-57	10000 ± 200
A8406-58	12000 ± 200

Frame grabber cables **A8406 series**

Cable for IMAQ PCI-1424/IMAQ PCI-1422 frame grabber **A8406-32/-33/-34/-35**

A8406-32/-33/-34/-35 cable are designed to connect the flat panel sensor to the National Instrument IMAQ PCI-1424 and PCI-1422 digital frame grabber board. Both ends of this cable have connectors. One end is a 36-pin plug mating with the flat panel sensor digital output receptacle, while the other end is a 100-pin plug for the IMAQ PCI-1424 and PCI-1422.

■ Pin connection for A8406-32

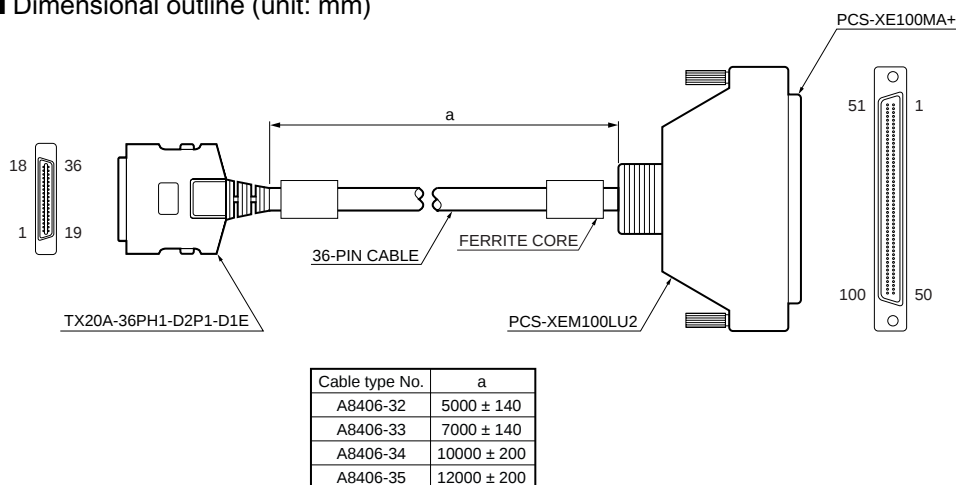
TX20A-36PH1-D2P1-D1E Pin No.	Signal	PCS-XE100MA+ Pin No.	TX20A-36PH1-D2P1-D1E Pin No.	Signal	PCS-XE100MA+ Pin No.
1	Data12+ (MSB)	23	19	Data12- (MSB)	24
2	Data11+	21	20	Data11-	22
3	Data10+	19	21	Data10-	20
4	Data9+	17	22	Data9-	18
5	Data8+	15	23	Data8-	16
6	Data7+	13	24	Data7-	14
7	Data6+	11	25	Data6-	12
8	Data5+	9	26	Data5-	10
9	Data4+	7	27	Data4-	8
10	Data3+	5	28	Data3-	6
11	Data2+	3	29	Data2-	4
12	Data1+ (LSB)	1	30	Data1- (LSB)	2
13	Reserved *12	33	31	GND	99
14	Reserved *12	35	32	GND	100
15	ExtTrgGrb (TTL)	37	33	IntExt (TTL)	39
16	Vsync+	41	34	Vsync-	42
17	Hsync+	43	35	Hsync-	44
18	Pclk+	49	36	Pclk-	50

*12: The signals connected to these pins depend on each devices. Refer to the datasheet for the flat panel sensor.

Note) The IMAQ PCI-1422 frame grabber board may not be compatible with a few types of HAMAMATSU flat panel sensors. The compatibility should be asked to National Instruments Corporation (<http://www.ni.com/>) with reference to datasheets of the flat panel sensors.

The two types of output are available with flat panel sensors: RS-422 and LVDS. Select a digital frame grabber that matches the output type of the flat panel sensor.

■ Dimensional outline (unit: mm)



Frame grabber cables A8406 series

Cable for IMAQ PCI-1424/IMAQ PCI-1422 frame grabber A8406-42/-43/-44/-45

A8406-42/-43/-44/-45 cable are designed to connect the flat panel sensor to the National Instrument IMAQ PCI-1424 and IMAQ PCI-1422 digital frame grabber board. Both ends of this cable have connectors. One end is a 80-pin plug mating with the flat panel sensor digital output receptacle, while the other end is a 100-pin plug for the IMAQ PCI-1424 and IMAQ PCI-1422.

Pin connection for A8406-42

PCS-E80FA Pin No.	Signal	PCS-XE100MA+ Pin No.	PCS-E80FA Pin No.	Signal	PCS-XE100MA+ Pin No.
1	A_Data1+ (LSB)	1	41	B_Data1+ (LSB)	51
2	A_Data1- (LSB)	2	42	B_Data1- (LSB)	52
3	A_Data2+	3	43	B_Data2+	53
4	A_Data2-	4	44	B_Data2-	54
5	A_Data3+	5	45	B_Data3+	55
6	A_Data3-	6	46	B_Data3-	56
7	A_Data4+	7	47	B_Data4+	57
8	A_Data4-	8	48	B_Data4-	58
9	A_Data5+	9	49	B_Data5+	59
10	A_Data5-	10	50	B_Data5-	60
11	A_Data6+	11	51	B_Data6+	61
12	A_Data6-	12	52	B_Data6-	62
13	A_Data7+	13	53	B_Data7+	63
14	A_Data7-	14	54	B_Data7-	64
15	A_Data8+	15	55	B_Data8+	65
16	A_Data8-	16	56	B_Data8-	66
17	A_Data9+	17	57	B_Data9+	67
18	A_Data9-	18	58	B_Data9-	68
19	A_Data10+	19	59	B_Data10+	69
20	A_Data10-	20	60	B_Data10-	70
21	A_Data11+	21	61	B_Data11+	71
22	A_Data11-	22	62	B_Data11-	72
23	A_Data12+ *13	23	63	B_Data12+ *13	73
24	A_Data12- *13	24	64	B_Data12- *13	74
25	A_Data13+	25	65	B_Data13+	75
26	A_Data13-	26	66	B_Data13-	76
27	A_Data14+ *14	27	67	B_Data14+ *14	77
28	A_Data14- *14	28	68	B_Data14- *14	78
29	Reserved	95	69	Reserved	97
30	Reserved	-	70	Reserved	-
31	Reserved	96	71	Reserved	98
32	Reserved	-	72	Reserved	-
33	IntExt (TTL)	39	73	ExtTrgGrb (TTL)	37
34	Reserved	40	74	Reserved	38
35	Vsync+	41	75	Reserved *15	33
36	Vsync-	42	76	Reserved	34
37	Hsync+	43	77	Reserved *15	35
38	Hsync-	44	78	Reserved	36
39	Pclk+	49	79	GND	99
40	Pclk-	50	80	GND	100

*13: MSB for 12 bit

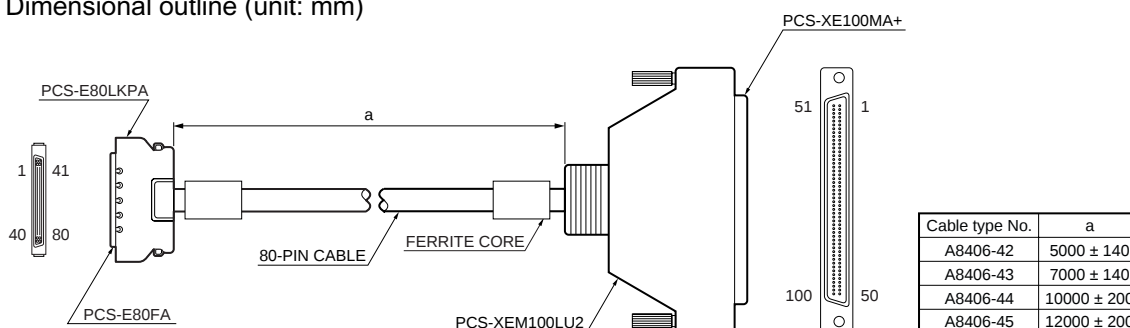
*14: MSB for 14 bit

*15: The signals connected to these pins depend on each devices. Refer to the datasheet for the flat panel sensor.

Note) The IMAQ PCI-1422 frame grabber board may not be compatible with a few types of HAMAMATSU flat panel sensors. The compatibility should be asked to National Instruments Corporation (<http://www.ni.com/>) with reference to datasheets of the flat panel sensors.

The two types of output are available with flat panel sensors: RS-422 and LVDS. Select a digital frame grabber that matches the output type of the flat panel sensor.

Dimensional outline (unit: mm)



Frame grabber cables **A8406 series**

Cable for IMAQ PCI-1424/IMAQ PCI-1422 frame grabber **A8406-52/-53/-54/-55**

A8406-52/-53/-54/-55 cable are designed to connect the flat panel sensor to the National Instrument IMAQ PCI-1424 and IMAQ PCI-1422 digital frame grabber board. Both ends of this cable have connectors. One end is a 80-pin plug mating with the flat panel sensor digital output receptacle, while the other end is a 100-pin plug for the IMAQ PCI-1424 and IMAQ PCI-1422.

■ Pin connection for A8406-52

TX20A-36PH1-D2P1-D1 Pin No.	Signal	PCS-XE100MA+ Pin No.	TX20A-36PH1-D2P1-D1 Pin No.	Signal	PCS-XE100MA+ Pin No.
1	Data1+ (LSB)	1	21	Data1- (LSB)	2
2	Data2+	3	22	Data2-	4
3	Data3+	5	23	Data3-	6
4	Data4+	7	24	Data4-	8
5	Data5+	9	25	Data5-	10
6	Data6+	11	26	Data6-	12
7	Data7+	13	27	Data7-	14
8	Data8+	15	28	Data8-	16
9	Data9+	17	29	Data9-	18
10	Data10+	19	30	Data10-	20
11	Data11+	21	31	Data11-	22
12	Data12+ * ¹⁶	23	32	Data12- * ¹⁶	24
13	Data13+	25	33	Data13-	26
14	Data14+ * ¹⁷	27	34	Data14- * ¹⁷	28
15	Reserved * ¹⁸	33	35	GND	99
16	Reserved * ¹⁸	35	36	GND	100
17	ExtTrgGrb (TTL)	37	37	IntExt (TTL)	39
18	Vsync+	41	38	Vsync-	42
19	Hsync+	43	39	Hsync-	44
20	Pclk+	49	40	Pclk-	50

*16: MSB for 12 bit

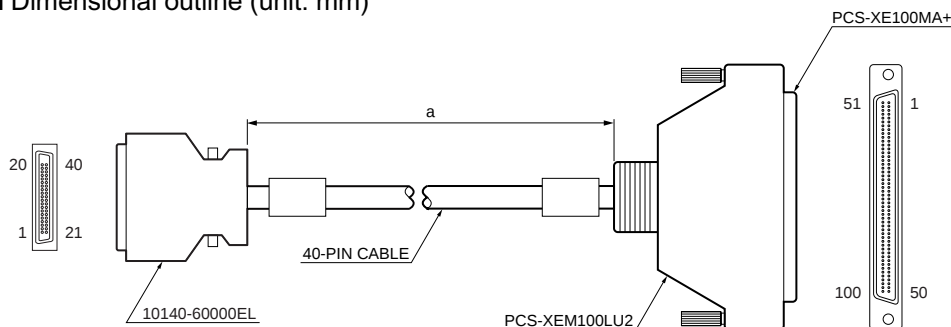
*17: MSB for 14 bit

*18: The signals connected to these pins depend on each devices. Refer to the datasheet for the flat panel sensor.

Note) The IMAQ PCI-1422 frame grabber board may not be compatible with a few types of HAMAMATSU flat panel sensors. The compatibility should be asked to National Instruments Corporation (<http://www.ni.com/>) with reference to datasheets of the flat panel sensors.

The two types of output are available with flat panel sensors: RS-422 and LVDS. Select a digital frame grabber that matches the output type of the flat panel sensor.

■ Dimensional outline (unit: mm)



Cable type No.	a
A8406-52	5000 ± 140
A8406-53	7000 ± 140
A8406-54	10000 ± 200
A8406-55	12000 ± 200

Frame grabber cables A8406 series

Cable for IMAQ PCI-1424/IMAQ PCI-1422 frame grabber A8406-62/-64

A8406-62/-64 cable are designed to connect the flat panel sensor to the National Instrument IMAQ PCI-1424 and IMAQ PCI-1422 digital frame grabber board. Both ends of this cable have connectors. One end is a 68-pin plug mating with the flat panel sensor digital output receptacle, while the other end is a 100-pin plug for the IMAQ PCI-1424 and IMAQ PCI-1422.

Pin connection for A8406-62/-64

PCS-XE68MA+ Pin No.	Signal	PCS-XE100MA+ Pin No.	PCS-XE68MA+ Pin No.	Signal	PCS-XE100MA+ Pin No.
1	A_Data1+ (LSB)	1	35	A_Data1- (LSB)	2
2	A_Data2+	3	36	A_Data2-	4
3	A_Data3+	5	37	A_Data3-	6
4	A_Data4+	7	38	A_Data4-	8
5	A_Data5+	9	39	A_Data5-	10
6	A_Data6+	11	40	A_Data6-	12
7	A_Data7+	13	41	A_Data7-	14
8	A_Data8+	15	42	A_Data8-	16
9	A_Data9+	17	43	A_Data9-	18
10	A_Data10+	19	44	A_Data10-	20
11	A_Data11+	21	45	A_Data11-	22
12	A_Data12+	23	46	A_Data12-	24
13	A_Data13+ *19	25	47	A_Data13- *19	26
14	A_Data14+ *20	27	48	A_Data14- *20	28
15	B_Data1+ (LSB)	51	49	B_Data1- (LSB)	52
16	B_Data2+	53	50	B_Data2-	54
17	B_Data3+	55	51	B_Data3-	56
18	B_Data4+	57	52	B_Data4-	58
19	B_Data5+	59	53	B_Data5-	60
20	B_Data6+	61	54	B_Data6-	62
21	B_Data7+	63	55	B_Data7-	64
22	B_Data8+	65	56	B_Data8-	66
23	B_Data9+	67	57	B_Data9-	68
24	B_Data10+	69	58	B_Data10-	70
25	B_Data11+	71	59	B_Data11-	72
26	B_Data12+	73	60	B_Data12-	74
27	B_Data13+ *19	75	61	B_Data13- *19	76
28	B_Data14+ *20	77	62	B_Data14- *20	78
29	Reserved *21	33	63	GND	99
30	Reserved *21	35	64	GND	100
31	ExtTrgGrb (TTL)	37	65	IntExt (TTL)	39
32	Vsync+	41	66	Vsync-	42
33	Hsync+	43	67	Hsync-	44
34	Pclk+	49	68	Pclk-	50

*19: MSB for 13 bit

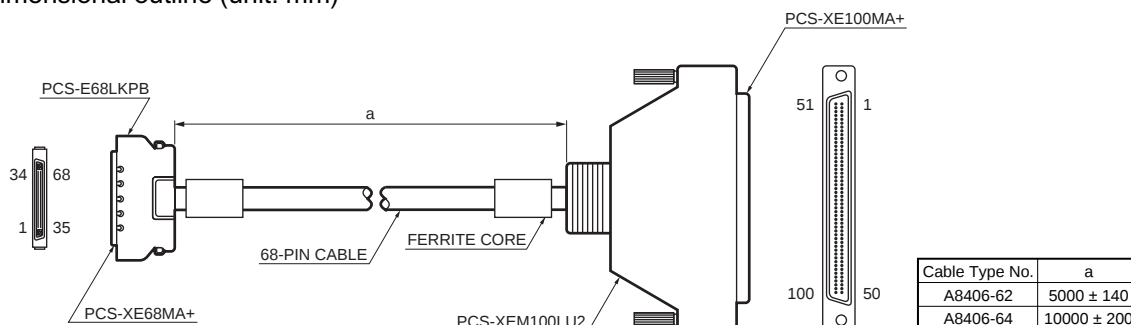
*20: MSB for 14 bit

*21: The signals connected to these pins depend on each devices. Refer to the datasheet for the flat panel sensor.

Note: The IMAQ PCI-1422 frame grabber board may not be compatible with a few types of HAMAMATSU flat panel sensors. The compatibility should be asked to National Instruments Corporation (<http://www.ni.com/>) with reference to datasheets of the flat panel sensors.

The two types of output are available with flat panel sensors: RS-422 and LVDS. Select a digital frame grabber that matches the output type of the flat panel sensor.

Dimensional outline (unit: mm)



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HAMAMATSU

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