TB-2235

GENERAL PRODUCT SPECIFICATION FOR XCede® HD BACKPLANE, DAUGHTERCARD AND MEZZANINE INTERCONNECT SYSTEM

Revision "Y"

Specification Revision Status

Revision	SCR No.	Description	Initial	Date
R	S4562	Added section4.7the power connector mated bulk resistance	B.Wang	5-6-16
T	S4768	Section 7.2, corrected compliant pin X-Y TP. Section 8.0, added .0157 compliant pin insertion and retention.	B.Wang	7-16-16
U	S5028	Updated table section 4, Bulk Resistance. Added Power connector compliant pin TP	B.Wang	10-13-16
V	S5298	Updated Note in Section 4.8	B.Murphy	01/05/17
W	S5809	Updated section 4.7,Added section 4.8 4.9 4.10 4.11 Reorganized section 5.1 7.1 7.2	B.Wang	05/22/17
Y	S7983	Updated table section 4, Bulk Resistance. Updated Note in Section 6.	J.Ni	11/15/19

Amphenol TCS
A Division of Amphenol Corporation

Amphenol TCS
200 Innovative Way, Suite 201
Nashua, NH 03062
603.879.3000

www.amphenol-icc.com

Aptera, Chameleon, Crossbow, eHSD, GbX, HD Plus, HDM Plus, HDM, HD-Optyx, InfinX, Lynx, NeXLev, Paladin, Ventura, VHDM, VHDM-HSD, and XCede, are trademarks or registered trademarks of Amphenol Corporation. AirMax VS is a registered trademark of FCI. Information contained in this document is summary in nature and subject to change without notice. Appearance of the final, delivered product may vary from the photographs shown herein.

© Amphenol Corporation 2019 • All rights reserved • Printed in the USA

1. SCOPE

1.1. Content

1.1.1. This specification covers the performance, test, and quality requirements for the XCede HD backplane interconnect system. These connectors are two-piece devices that connect two printed circuit boards. Receptacle connectors and pin connectors are through hole devices with eye-of-the-needle compliant pin contacts. The XCede HD connector family consists of modular configurations with custom power and guidance modules.

1.1.2. This specification covers the backplane, daughtercard and mezzanine interconnects.

1.2. Qualification

1.2.1. When tests are performed on subject product line, procedures specified in EIA-364-B shall be used per the test sequences outlined in Amphenol TCS Technical Bulletin TB2023. All inspections shall be performed using applicable inspection plan and product drawings.

2. REFERENCE DOCUMENTS

2.1. The following documents form a part of this specification to the extent specified herein.

2.1.1. Amphenol TCS Documents
TB-2023 Amphenol TCS Commercial Connector Qualification Plan
TB-2237 XCede HD Routing Guidelines

2.2. Commercial Standards

2.2.1. EIA-364-B Electrical Connector Test Procedure Including Environmental Classifications

2.2.2. GR-1217-CORE-Generic Requirements for Separable Electrical Connectors used in Telecommunications Hardware

2.2.3. IEC-512-Electromechanical components for electronic equipment – Basic testing procedures and measuring methods, IEC-60352-6 international standards, solderless connections, press fit connections, general requirements, test method and practical guidance.

3. MATERIAL FINISHES

3.1. Contacts

3.1.1. Backplane signal blades are 0.23 mm thick high performance copper alloy. Contacts are plated per EGS205.

3.1.2. Backplane shield blades are 0.30 mm thick high performance copper alloy. Contacts are plated per EGS205.

3.1.3. Backplane signal blades and shield blades are lubricated.

3.1.4. Receptacle signal and shield contacts are 0.203 mm thick high performance copper alloy. Contacts are plated per EGS205.

3.1.5. Power Blades are 0.30 mm thick high performance copper alloy. Contacts are plated per EGS205.

3.1.6. Power Receptacle contacts are 0.30 mm thick high performance copper alloy. Contacts are plated per EGS205.

Notes:

All contacts meet lead free requirements, refer to EGS205.

Copyright © Amphenol Corporation 2019 • All rights reserved

3.2. Sub Components

Component	Material	Specification
Insulator	Glass reinforced polyester (LCP)	UL 94V-0 Rating, Color Grey
Stiffener	Stainless steel, Type 301	N/A
Backplane Guide Pins and Keys	Stainless steel	QQ-S-764, CL 303 or 303 SE Condition A
Daughtercard Key Bushing	Sintered stainless steel	Material Power Industries Federation Standard 35, SS 316NI-25

4. LENGTH OF TRACES AND MATED BULK RESISTANCE

4.1. 2 Pair Connector

Wafer A			Wafer B		
Contact row	Trace Length (mm)	Resistance (mΩ)	Contact row	Trace Length (mm)	Resistance (mΩ)
GND1	17.54	9.57	GND1	16.34	7.98
A	19.13	10.88	A	17.63	9.6
B	20.53	11.36	B	18.83	9.85
GND2	22.24	9.42	GND2	20.74	9.25
C	24.53	12.92	C	23.23	12.63
D	25.53	13.88	D	23.93	12.18
GND3	27.34	10.72	GND3	26.24	9.4

4.2. 3 Pair Connector

Wafer A			Wafer B		
Contact row	Trace Length (mm)	Resistance (mΩ)	Contact row	Trace Length (mm)	Resistance (mΩ)
A	19.13	11.32	GND1	16.64	9.25
B	20.23	11.77	A	18.33	11.35
GND1	22.14	10.38	B	19.53	12.21
C	24.13	14.4	GND2	21.24	11.18
D	25.13	14.71	C	23.43	14.92
GND2	27.14	12.64	D	24.33	15.52
E	28.93	17.05	GND3	26.14	10.88
F	29.83	13.42	E	28.33	18.4
GND3	31.54	12.55	F	29.13	17.88
			GND4	30.74	11.5

Copyright © Amphenol Corporation 2019 • All rights reserved

4.3.4 Pair Connector

Wafer A			**Wafer B**		
Contact row	Trace Length (mm)	Resistance (mΩ)	Contact row	Trace Length (mm)	Resistance (mΩ)
A	18.83	9.54	GND1	16.34	7.69
B	20.13	11.17	A	18.23	9.78
GND1	21.74	8.44	B	19.43	10.29
C	24.03	11.97	GND2	21.04	7.65
D	25.13	13.34	C	23.23	12.68
GND2	26.64	9.65	D	24.23	12.81
E	28.63	15.04	GND3	25.84	8.79
F	30.03	17.4	E	28.13	15.12
GND3	31.34	10.4	F	29.13	16.21
G	33.83	18	GND4	31.33	9.22
H	35.33	19.49	G	33.23	18.34
GND4	37.24	8.91	H	34.53	18.69
			GND5	36.34	11.02

Copyright © Amphenol Corporation 2019 • All rights reserved

4.4. 6 Pair Connector

Wafer A			**Wafer B**		
Contact row	Trace Length (mm)	Resistance (mΩ)	Contact row	Trace Length (mm)	Resistance (mΩ)
A	20.13	9.7	GND1	16.24	8.99
B	20.43	10.35	A	18.73	9.45
GND1	21.74	9.1	B	19.33	10.66
C	24.73	12.15	GND2	20.94	9.12
D	25.03	13.22	C	23.23	13.07
GND2	26.54	9.66	D	23.93	13.17
E	29.43	14.81	GND3	26.04	9.95
F	29.93	16.5	E	28.43	16.57
GND3	32.04	12.6	F	29.03	15.2
G	34.83	17.73	GND4	31.04	11.95
H	35.03	20.91	G	33.83	19.45
GND4	37.24	12.41	H	34.43	20.3
J	40.33	21.21	GND5	36.44	13.48
K	40.53	23.38	J	39.43	24.72
GND 5	42.54	13.98	K	39.93	23.01
L	45.83	24.52	GND 6	42.14	13.81
M	45.83	26.41	L	45.33	27.66
GND 6	47.64	14.45	M	45.73	24.55
			GND7	47.54	17.38

Copyright © Amphenol Corporation 2019 • All rights reserved

4.5. 8 Pair Connector trace lengths and bulk resistance TBD.

Wafer A			Wafer B		
Contact row	Trace Length (mm)	Resistance (mΩ)	Contact row	Trace Length (mm)	Resistance (mΩ)
GND1			GND1		
A			A		
B			B		
GND2			GND2		
C			C		
D			D		
GND3			GND3		
E			E		
F			F		
GND4			GND4		
G			G		
H			H		
GND5			GND5		
J			J		
K			K		
GND 6			GND 6		
L			L		
M			M		
GND 7			GND7		
N			N		
P			P		
GND8			GND8		
Q			Q		
R			R		
GND9			GND9		

Copyright © Amphenol Corporation 2019 • All rights reserved

4.6. 6 Pair Stacker 15mm connector

Wafer A			Wafer B		
Contact row	Trace Length (mm)	Resistance (mΩ)	Contact row	Trace Length (mm)	Resistance (mΩ)
GND1*	15.54		GND1	15.94	8.66
A	15.83	9.99	A	16.03	10.31
B	15.83	9.85	B	15.93	10.52
GND2	15.54	9.21	GND2	15.54	9.11
C	15.83	11.25	C	15.93	11.87
D	15.83	11.16	D	15.93	11.90
GND3	15.54	9.11	GND3	15.54	10.03
E	15.83	11.85	E	15.93	11.44
F	15.83	11.44	F	15.93	10.88
GND4	15.54	9.84	GND4	15.54	10.21
G	15.93	11.16	G	15.93	10.28
H	15.83	11.13	H	15.93	10.32
GND5	15.54	9.22	GND5	15.54	10.23
J	15.83	11.10	J	15.93	11.56
K	15.83	11.35	K	15.93	11.45
GND6	15.54	9.58	GND6	15.64	10.42
L	15.93	9.48	L	15.93	10.47
M	15.83	9.90	M	15.93	10.43
GND7	15.64	9.67	GND7	15.64	9.40

*6 Pair Stacker available with and without Wafer A Ground 1 lead.

Copyright © Amphenol Corporation 2019 • All rights reserved

4.7. 6 Pair Stacker 41mm connector

Wafer A			Wafer B		
Contact row	Trace Length (mm)	Resistance (mΩ)	Contact row	Trace Length (mm)	Resistance (mΩ)
GND1*	41.54		GND1	41.94	10.18
A	41.83	20.15	A	42.03	25.4
B	41.83	22.62	B	41.93	22.75
GND2	41.54	9.05	GND2	41.54	10.27
C	41.83	22.72	C	41.93	27.63
D	41.83	23.04	D	41.93	22.45
GND3	41.54	9.62	GND3	41.54	9.67
E	41.83	22.76	E	41.93	20.86
F	41.83	23.39	F	41.93	21.93
GND4	41.54	9.28	GND4	41.54	8.76
G	41.93	22.32	G	14193	20.48
H	41.83	22.24	H	41.93	22.68
GND5	41.54	9.62	GND5	41.54	9.47
J	41.83	21.52	J	41.93	21.92
K	41.83	22.08	K	41.93	22.35
GND6	41.54	9.45	GND6	41.64	8.79
L	41.93	21.21	L	41.93	26.3
M	41.83	22.05	M	41.93	24.67
GND7	41.64	9.93	GND7	41.64	8.91

*6 Pair Stacker available with and without Wafer A Ground 1 lead.

Copyright © Amphenol Corporation 2019 • All rights reserved

4.8. 6 Pair Stacker 20mm connector

Wafer A			Wafer B		
Contact row	Trace Length (mm)	Resistance (mΩ)	Contact row	Trace Length (mm)	Resistance (mΩ)
GND1*	20.52	8.06	GND1	20.65	6.76
A	20.62	12.13	A	20.36	11.96
B	20.63	13.43	B	20.33	12.67
GND2	20.49	9.17	GND2	20.49	8.62
C	20.62	13.41	C	20.36	12.98
D	20.63	13.56	D	20.33	12.83
GND3	20.49	9.24	GND3	20.49	8.78
E	20.62	12.86	E	20.36	12.38
F	20.63	13.23	F	20.33	12.15
GND4	20.49	8.90	GND4	20.49	8.69
G	20.62	12.61	G	20.36	12.23
H	20.63	12.97	H	20.33	12.56
GND5	20.49	9.36	GND5	20.49	8.68
J	20.62	13.18	J	20.36	12.75
K	20.63	12.98	K	20.33	12.60
GND6	20.49	9.01	GND6	20.49	7.86
L	20.62	12.21	L	20.36	12.57
M	20.63	12.63	M	20.33	12.60
GND7	20.49	8.36	GND7	20.48	8.50

*6 Pair Stacker available with and without Wafer A Ground 1 lead.

Copyright © Amphenol Corporation 2019 • All rights reserved

4.9.4 Pair RAM connector

Wafer A			Wafer B		
Contact row	Trace Length (mm)	Resistance (mΩ)	Contact row	Trace Length (mm)	Resistance (mΩ)
A		13.34	GND1		9.02
B		14.11	A		13.79
GND1		10.79	B		14.03
C		17.79	GND2		10.29
D		19.17	C		18.05
GND2		12.55	D		19.54
E		22.16	GND3		11.67
F		24.41	E		23.32
GND3		13.7	F		25.14
G		26.89	GND4		13.71
H		29.2	G		28.26
GND4		12.18	H		30.02
			GND5		15.79

4.10. 4 Pair IRAM connector

Wafer A			Wafer B		
Contact row	Trace Length (mm)	Resistance (mΩ)	Contact row	Trace Length (mm)	Resistance (mΩ)
A		21.28	GND1		11.96
B		22.17	A		19.93
GND1		11.91	B		20.32
C		22.86	GND2		10.87
D		23.33	C		20.32
GND2		12.92	D		20.96
E		22.56	GND3		11.34
F		23.51	E		21.13
GND3		13.18	F		22.45
G		22.83	GND4		11.84
H		25.05	G		21.67
GND4		10.41	H		23.1
			GND5		14.18

Copyright © Amphenol Corporation 2019 • All rights reserved

4.11.6 Pair RAM connector

Wafer A			**Wafer B**		
Contact row	Trace Length (mm)	Resistance (mΩ)	Contact row	Trace Length (mm)	Resistance (mΩ)
A		13.72	GND1		9.89
B		15.31	A		15.45
GND1		10.88	B		15.9
C		17.29	GND2		11.83
D		20.04	C		20.75
GND2		11.81	D		20.38
E		22.64	GND3		12.84
F		24.78	E		26.43
GND3		13.78	F		25.52
G		26.05	GND4		15.26
H		30.09	G		30.4
GND4		15.83	H		30.54
J		32.27	GND5		15.76
K		35.23	J		38.6
GND 5		17.61	K		35.49
L		36.34	GND6		18.14
M		39.68	L		41.2
GND 6		17.48	M		38
			GND7		20.73

Copyright © Amphenol Corporation 2019 • All rights reserved

4.12.6 Pair IRAM connector

Wafer A			**Wafer B**		
Contact row	Trace Length (mm)	Resistance (mΩ)	Contact row	Trace Length (mm)	Resistance (mΩ)
A		21.09	GND1		11.34
B		23.85	A		23.69
GND1		12.37	B		22.72
C		23.56	GND2		11.98
D		25.39	C		24.51
GND2		13.18	D		24.62
E		25.88	GND3		11.19
F		26.12	E		25.76
GND3		14.28	F		24.98
G		25.76	GND4		12.07
H		28.1	G		26.09
GND4		15.86	H		26.55
J		27.42	GND5		13.18
K		28.56	J		30.81
GND 5		15.32	K		26.98
L		27.95	GND6		14.32
M		30.11	L		30.35
GND 6		14.92	M		25.73
			GND7		16.8

4.13. Power connector

	3pair	4pair	6pair
Contact row	Resistance (mΩ)	Resistance (mΩ)	Resistance (mΩ)
Postion-1	1.69	1.70	1.60
Postion-2	1.78	1.87	1.58
Postion-3	N/A	2.03	1.83
Postion-4	N/A	N/A	2.40

Notes:

1.Mated bulk resistance values are typical values.
They may range as much as 15 mΩ higher or 5 mΩ lower than the typical value.

Copyright © Amphenol Corporation 2019 • All rights reserved

5. ELECTRICAL RATINGS

5.1. Resistance

Description	Value
Mating Interface Contact Resistance Change	10mΩ Maximum
Compliant Pin to Plated Through Hole Resistance	1 mΩ Maximum
Insulation Resistance	1000 Mega Ω

5.2. Voltage

Description	Agency	Working	DWV
Signal	UL 48 VAC (RMS)	250 VAC (RMS)	750 VAC (RMS)
Power	UL 48 VAC (RMS)	250 VAC (RMS)	750 VAC (RMS)

6. CURRENT AND TEMPERATURE RATINGS

Description	Value
Signal Contact	1.5 Amp per contact[(1) (2)]
Shield Contact	1.5 Amps per contact[(1) (2)]
Power Contact	10 Amps per blade[(1) (2)]
Maximum operating temperature rating	105°C
Minimum operating temperature rating	-40°C

Notes: Our UL listing was done with LC wafers. We do not recommend using HSD wafers to carry power current as there is more risk of shorting with the lossy material.

7. MECHANICAL RATINGS

7.1. Mechanical Performance

Wave contact	Value, per contact	
Description	**Grams**	**Newtons**
Signal and Shield Contact Normal Force – Wave Contact	40 End Of Life (EOL)	0.40
Signal and Shield Contact Engagement Force – Wave Contact[(4)(5)]	60 max	0.60 max
Signal and Shield Contact Separation Force – Wave Contact[(4)(5)]	20 min	0.20 min
Signal, Shield, and Power Contact Durability	Rated for 250 Mating Cycles	
Contact Mechanical Wipe Minimum Values	Signal 3.0/2.0 mm Shield 4.0/3.0/2.0 mm	

Bifurcated contact	Value, per contact	
Description	**Grams**	**Newtons**
Signal and Shield Contact Normal Force – Bifurcated Contact	30 End Of Life (EOL)	0.30
Signal and Shield Contact Engagement Force – Bifurcated Contact[(3)(4)(5)]	45 max	0.45 max
Signal Contact Separation Force – Bifurcated Contact[(3)(4)(5)]	15 min	0.15 min
Shield Contact Separation Force – Bifurcated Contact[(3)(4)(5)]	11 min	0.11 min
Signal and Shield Contact Engagement Force – Stacker Contact[(3)(4)(5)]	65max	0.65max
Signal, Shield, and Power Contact Durability	Rated for 250 Mating Cycles	
Contact Mechanical Wipe Minimum Values	Signal 3.0/2.0 mm Shield 4.0/3.0/2.0 mm	

Copyright © Amphenol Corporation 2019 • All rights reserved

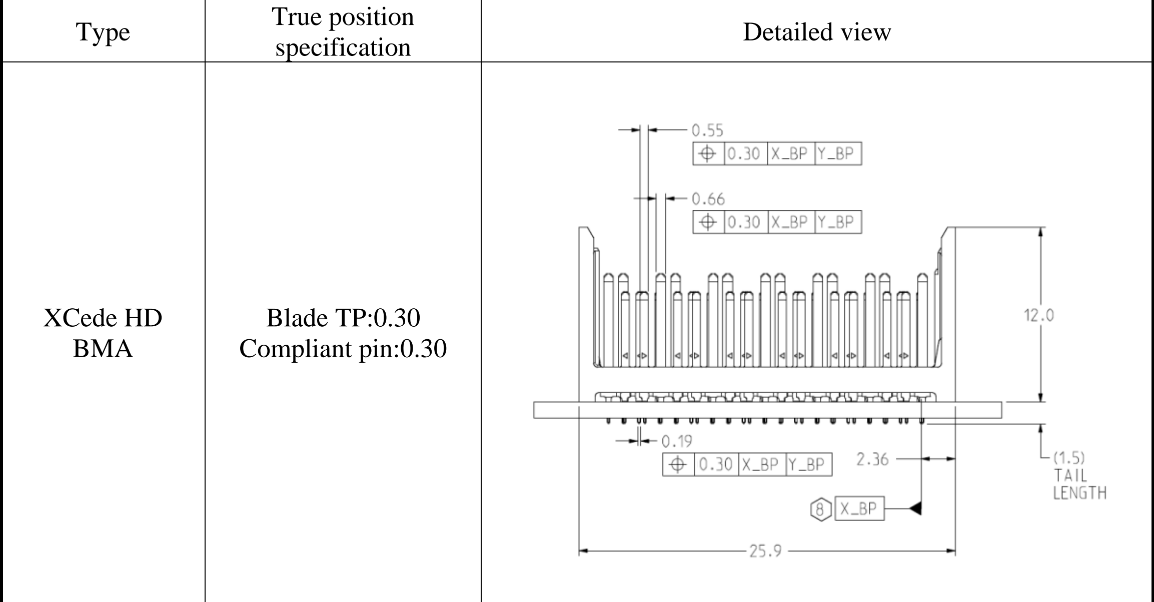
Power contact	**Value, per contact**	
Description	**Grams**	**Newtons**
Power Contact Normal Force	70 End Of Life (EOL)	0.70
Power Contact Engagement Force(4)(5)	85 max	0.85 max
Power Contact Separation Force(4)(5)	40 min	0.40 min
Signal, Shield, and Power Contact Durability	Rated for 250 Mating Cycles	
Power Contact Mechanical Wipe Minimum Values	power 4.5/5.5 mm	

	Value, per wafer	
Description	**Lbs**	**Newtons**
Front housing retention force	4 min	17.6 min

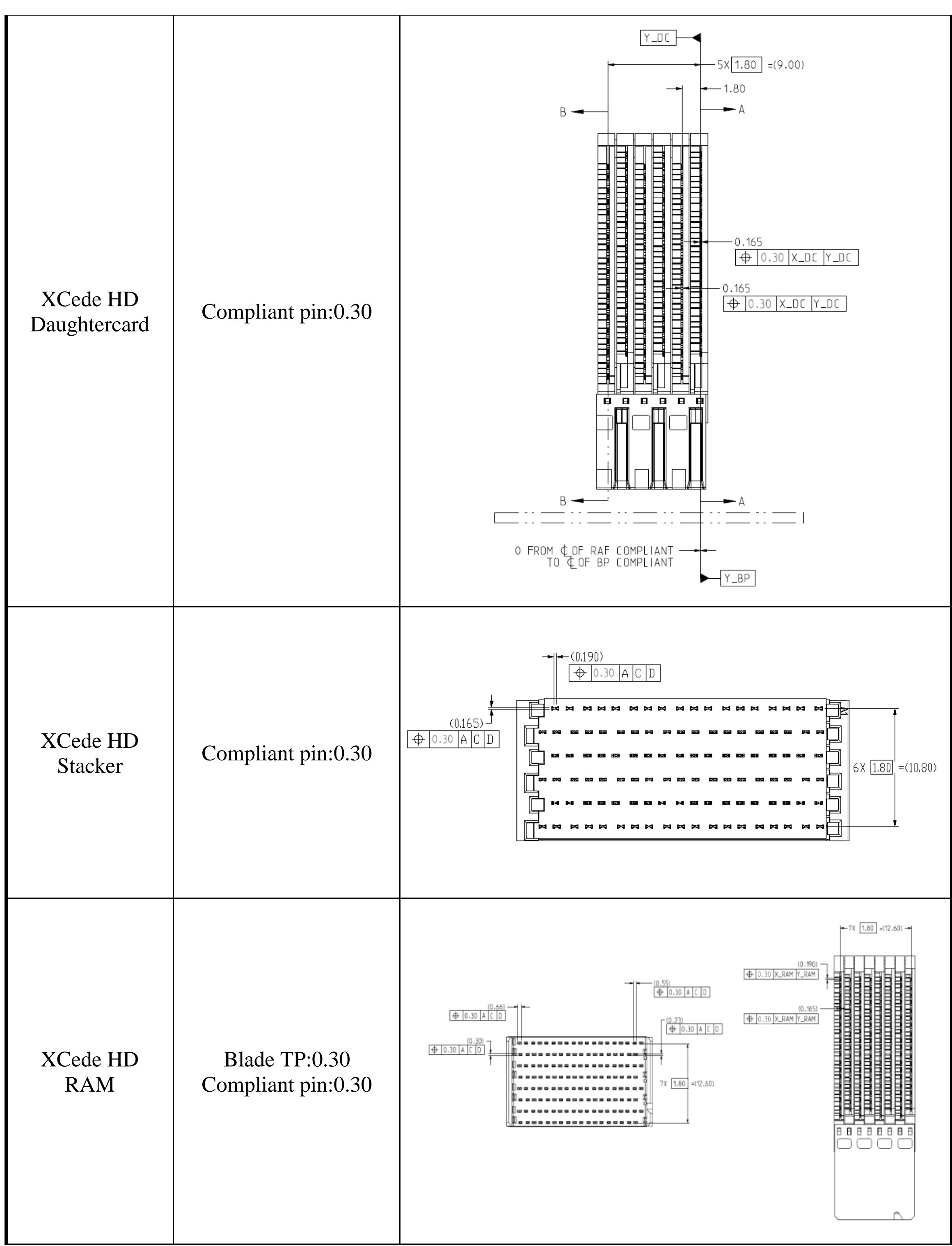
Note:
1,Current has been de-rated per EIA-364-TP70
2,Product was tested in worst-case conditions where the PCB did not have any power planes. For other test conditions please contact ATCS Application Engineering.
3,It is recommended the customer design the latching system to meet the wave contact engagement and separation force for system upgrades utilizing the wave contact design.
4. These values are maximum and minimum expected forces, averaged over the number of mating points (contacts) in a connector. This data is to be used for purposes of system mechanical sizing.
5.All engagement/separation force values assume the connector is pressed on a sufficiently rigid PCB without excessive flexing during mating.

7.2. Backplane , Daughtercard and Mezzanine Module Assembly True Position Requirements

7.2.1. The true position of the compliant pin interface is defined prior to connector pressing onto board.
7.2.2. Compliant pin tips to be measured per best fit floating grid.

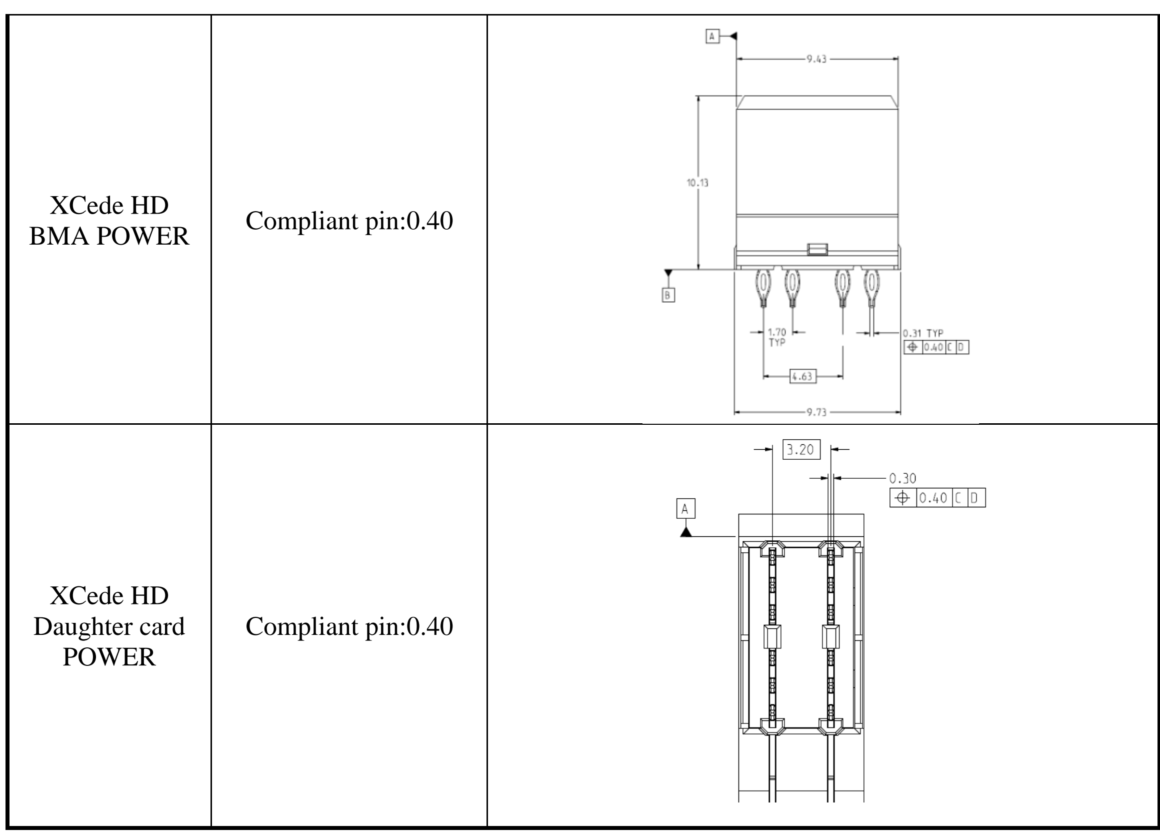
Type	True position specification	Detailed view
XCede HD BMA	Blade TP:0.30 Compliant pin:0.30	

Copyright © Amphenol Corporation 2019 • All rights reserved



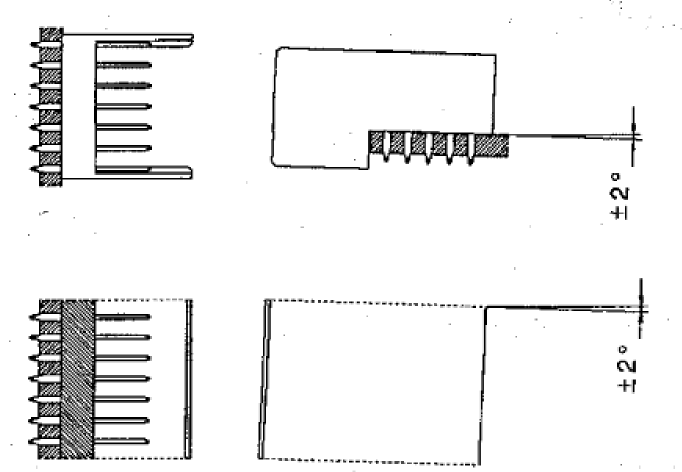
XCede HD Daughtercard	Compliant pin:0.30	
XCede HD Stacker	Compliant pin:0.30	
XCede HD RAM	Blade TP:0.30 Compliant pin:0.30	

Copyright © Amphenol Corporation 2019 • All rights reserved



XCede HD BMA POWER	Compliant pin:0.40	
XCede HD Daughter card POWER	Compliant pin:0.40	

7.3. Connector mating angle



The maximum mating angle allowable in the X and Y axis is 2 degrees.

Copyright © Amphenol Corporation 2019 • All rights reserved

8. COMPLIANT PIN INTERFACE

Description	Value per Pin, lbs
0.0157” Drill (XCede HD Femto DC/BMA Pin)	
Signal and Shield Compliant Pin Insertion, 0.0157 drill	5 Maximum(6)
Signal and Shield Compliant Pin Retention, 0.0157 drill	0.50 Minimum (7) (8)
0.0177” Drill (XCede HD Nano DC/BMA Pin)	
Signal and Shield Compliant Pin Insertion, 0.0177 drill	6 Maximum(6)
Signal and Shield Compliant Pin Retention, 0.0177 drill	0.80 Minimum (7)
0.0217” Drill (XCede HD Standard DC/BMA Pin)	
Signal and Shield Compliant pin Insertion, 0.0217 drill	8 Maximum (6)
Signal and Shield Compliant pin Retention, 0.0217 drill	0.80 Minimum (7)
0.033” Drill (XCede HD Power DC/BMA Pin)	
Power Compliant Pin Insertion	15 Maximum(6)
Power Compliant Pin Retention	2.0 Minimum (7)

8.1. Radial hole deformation not to exceed 70µm measured from drilled hole
8.2. Axial hole deformation not to exceed 50µm per IEC 60352-5 measured in the vertical plane

Notes:

6. Ensure press can reach maximum force required to press connector with a safety factor of 1.2 [Maximum force= (Max value per pin)(1.2) (Number of pins on connector)].
7. Refer to technical bulletin TB-2237XCede HD Routing Guidelines, for drilled and finished hole requirements.
8. The average compliant pin retention shall not be less than 0.5lbf with no more than 10% of retention values between 0.5lbf and 0.4lbf, and no retention values below 0.4lbf.

9. Qualification TESTING

9.1. Sample Selection: Refer to Section 13 for minimum recommended connector sample size.
9.2. Test Sequence: Qualification testing shall be performed per the sequences listed in Section 13 of this document.
9.3. The qualification for the XCede HD product line was performed with the 4 Pair interconnect and by similarity all other derivatives of the product line are considered qualified.

10. REQUALIFICATION TESTING

10.1. If changes affecting form, fit or function are made to the product or to the manufacturing process, Product Engineering and Mechanical Integrity Engineering shall coordinate re-qualification testing of all or part of the original testing sequence as required.

11. ACCEPTANCE

11.1. Acceptance is based on verification that the product meets the requirements of Section 12. Failures attributed to equipment, test set-up, or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Verification of corrective action is required before re-submittal.

12. SPECIFICATION SUMMARY

Copyright © Amphenol Corporation 2019 • All rights reserved

12.1. Material

Parameters	Specification	XCede HD Value	Reference Document
Plating Integrity	Acceptable Porosity	3 Pores per cm^2	EIA-364-TP53 Exposed to nitric vapors
Contact Metallization	30□in Gold min over 50-150µin Ni or 10µin Gold min over 20-40µin NiW alloy	30□in Gold min over 50-150µin Ni or 10in Gold min over 20-40µin NiW alloy	GR-1217-CORE Per paragraph 9.1.1.2 EIA-364-TP09
Durability	200 Cycles	250 Cycles	GR-1217-CORE Per paragraph 9.1.1.2 EIA-364-TP09
Base	Surface finish is 16 RMS or otherwise specified	16 RMS on mating surfaces	GR-1217-CORE
Lubrication	Must be present on all backplane blades/shields	Must be present on all backplane blades/shields	GR-1217-CORE R5-67
Flammability Rating	94V-0	Must Pass Requirement	UL94

12.2. Mechanical

Parameters	Specification	XCede HD Value	Reference Document
Contact Normal Force	40 Grams End of Life (EOL)	40 Grams End of Life (EOL)	GR-1217-CORE EIA-364-TP04
Engagement Force	NA	SEE SECTION 7.0	EIA-364-TP37A
Contact Strength	Apply 0.25 lbs. Axial Force per contact	Apply 0.25 lbs. Axial Force per contact	GB-1217-CORE Per paragraph 6.1.7
Contact Wipe Distance	0.51 mm (0.020") min.	2.0 mm (0.079") min	GR-1217-CORE R5-28
Polarization Force	100 N (22.5 lbs)	Mate Samples 180° out of Phase	GR-1217-CORE Per paragraph 5.1.9
Compliant Pin Retention	N/A	SEE SECTION 8.0	GR-1217-CORE EIA-364-TP29
Contact Geometry	Minimum one curved surface in mating area	Minimum one curved surface in mating area	N/A
Hertzian Stress	N/A	Greater than 150 Kpsi	N/A

Copyright © Amphenol Corporation 2019 • All rights reserved

12.3. Electrical

Parameters	Specification	XCede HD Value	Reference Document
Contact Resistance Stability (LLCR)	Less than 10mΩ change from initial reading	Less than 10milli-Ohms change from initial reading	GR-1217-CORE Per paragraph 6.2.1 EIA-364-TP23
Compliant Pin to PTH Resistance	1mΩ maximum Test current 100mA and 20mV open circuit	1milli-Ohms maximum	GR-1217-CORE EIA-364-TP23
Mated Bulk Resistance	N/A	SEE SECTION 4.0	N/A
Signal Continuity	Less than 10 nanosecond interrupt	Less than 10 nanosecond interrupt	GR-1217-CORE
Current Rating	Less than 30°C Temperature Rise	SEE SECTION 6.0	GR-1217-CORE EIA-364-TP70
Insulation Resistance	1,000 MegaΩ	1,000 Mega Ohms	GR-1217-CORE
Dielectric Withstanding	1,000 VAC Peak	750 VAC Peak De-rated value	GR-1217-CORE EIA-364-TP20

Copyright © Amphenol Corporation 2019 • All rights reserved

12.4. Environmental

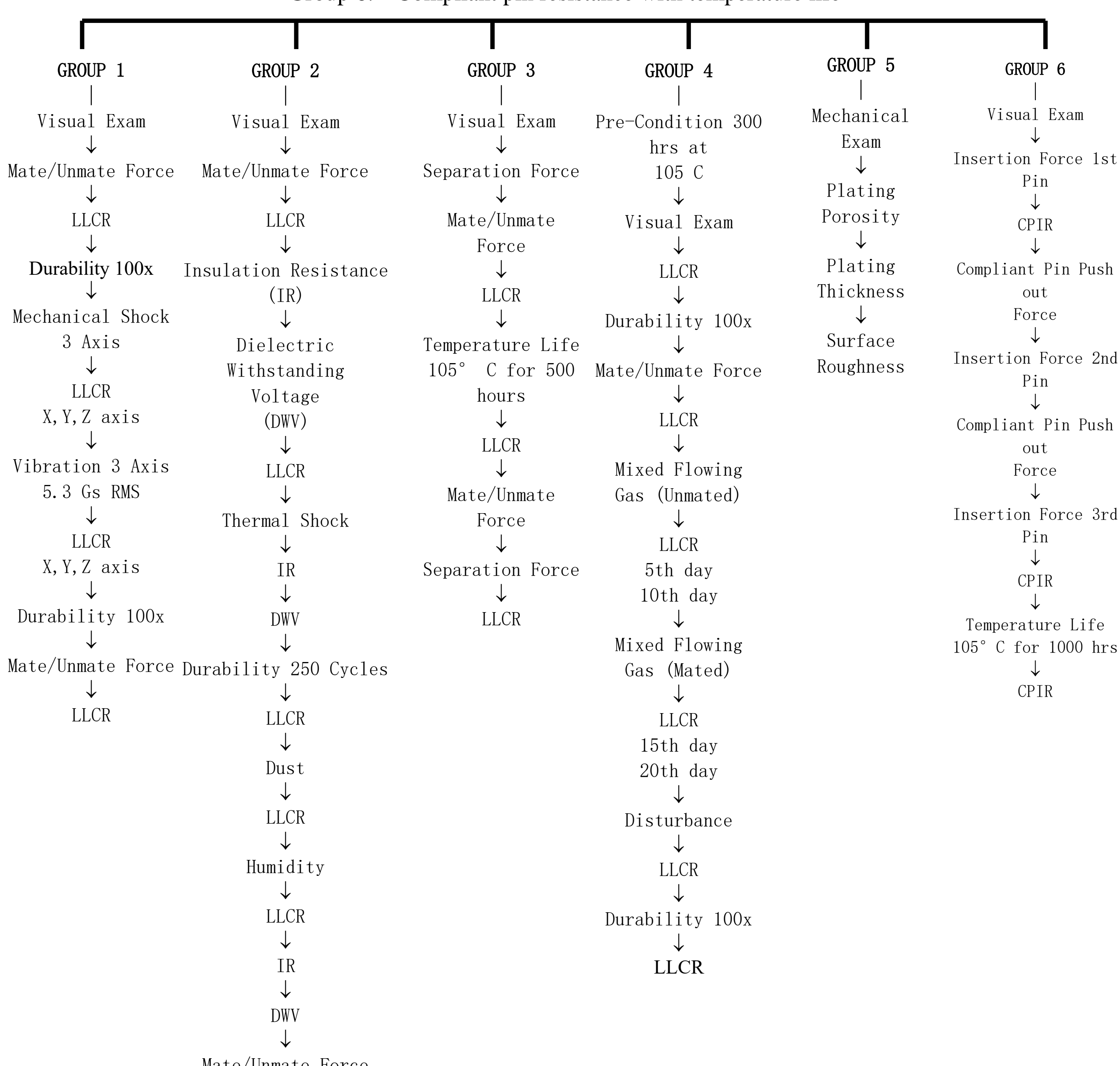
Parameters	**Specification**	**XCede HD Value**	**Reference Document**
Temperature Life	No Change in LLCR greater than 10m□	10milli-Ohms Maximum change	GR-1217-CORE EIA-364-TP17 Test condition 4 Per paragraph 6.3.2
Thermal Shock	No Change in LLCR greater than 10m□ 5 cycles for –55°C to 85°C	Same as above	GR-1217-CORE Per paragraph 6.3.3 EIA-364-TP32
Humidity Cycling	No Change in LLCR greater than 10m□ Relative Humidity 90 to 95% For 500 hrs	Same as above	GR-1217-CORE EIA-364-TP31 Procedure II
Dust	No Change in LLCR greater than 10m□	Same as above	GR-1217-CORE Per paragraph 9.1.1.1 EIA-364-TP91
Vibration	No Change in LLCR greater than 10m□ Random Vibration 5.3 RMS	Same as above	GR-1217-CORE EIA-364-TP28 Per paragraph 9.1.2.1
Mechanical Shock	No Change in LLCR greater than 10m□ 30 G's for 11 milliseconds Half Sine 3 axis	Same as above	GR-1217-CORE EIA-364-TP27
Mixed Flowing Gas	No Change in LLCR greater than 10m□ 300 hrs at 105°C thermal conditioning also included	Same as above	GR-1217-CORE Per paragraph 9.1.3 EIA-364-TP65

Copyright © Amphenol Corporation 2019 • All rights reserved

13. TELCORDIA QUALIFICATION TEST GROUP SUMMARY

13.1. Test Groups

Group 1: Vibration and mechanical shock with dust and durability
Group 2: Thermal shock and humidity with dust and durability
Group 3: Temperature life, 500 hrs @ 105°C
Group 4: Mixed flowing gas, 4 gases with durability-thermal conditioning included prior to test
Group 5: Porosity and plating thickness
Group 6: Compliant pin resistance with temperature life



Copyright © Amphenol Corporation 2019 • All rights reserved

FIGURE 1, Telcordia Test Plan GR-1217-CORE, CENTRAL OFFICE

13.1.1. Each test group will have a minimum 200 LLCR measurements.

13.1.2. Definitions

13.1.2.1. LLCR- Low Level Contact Resistance

13.1.2.2. CPIR- Compliant Pin Interface Resistance

13.1.2.3. DWV- Dielectric Withstanding Voltage

13.1.2.4. IR- Insulation Resistance

14. RESISTANCE MEASUREMENT SET-UP

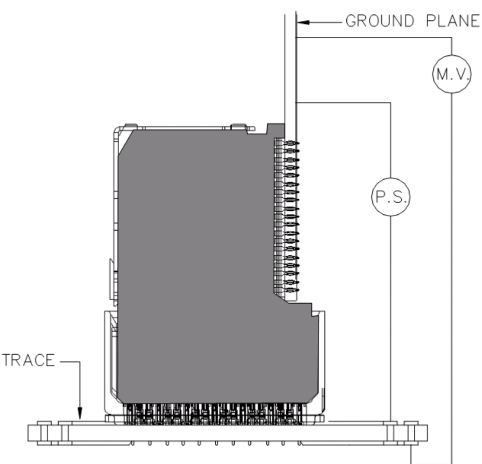


FIGURE 2. Typical contact resistance set-up. Kelvin 4 wire traces from connector hole to monitoring hole.

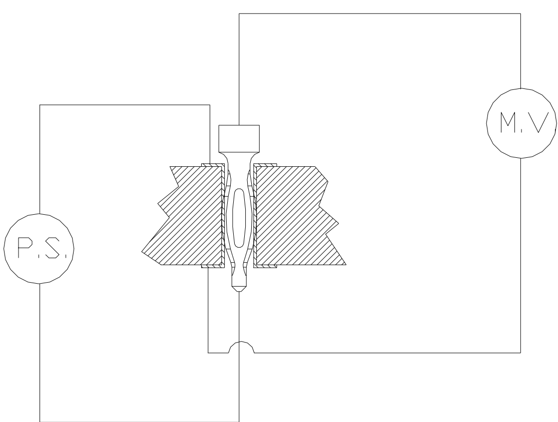


FIGURE 3. Typical compliant pin interface resistance (CPIR) set-up.

Copyright © Amphenol Corporation 2019 • All rights reserved