

# Contact reliability test per EIA-364-1000.01

## Hirose Bd to Bd Connector, FX10 Series

Prepared by Hideto Yamaguchi

**Test Group 1**

Test Order	Test	Days	Date	Applicable Standard	Procedure	Condition	Measurement	Document	Criteria	Remark
1	Mating/ Unmating Force	1		EIA-364-13B	Refer to EIA-364-13B	none	mating/ un mating Force	values and observations	Mating : 135 N MAX Unmating : 15N MIN	
2	LLCR (Low Level Contact Resistance)	1		EIA-364-23B	100 milliamperes at 20 millivolts maximum open source voltage	mate	contact resistance	values and observations	less than 60 milli ohms	
3	Temperature Life	42		EIA-364-17, Method A condition 3	105C°, 1000h (85C°, 1000h if the 105C° exceeds the rated temperature of the polymeric materials used in the connector)	mate	visual examination	values and observations	no evidence of physical damage	
4	LLCR (Low Level Contact Resistance)	1		EIA-364-23B	100 milliamperes at 20 millivolts maximum open source voltage	mate	contact resistance	values and observations	Resistance change: 20 milli ohms MAX	
5	Mating/ Unmating Force	1		EIA-364-13B	Refer to EIA-364-13B	none	mating/ un mating Force	values and observations	Mating : 135 N MAX Unmating : 15N MIN	
	making test report	7								
	TOTAL	53								

**Test Group 2**

Test Order	Test	Days	Date	Applicable Standard	Procedure	Condition	Measurement	Document	Criteria	Remark
1	LLCR (Low Level Contact Resistance)	1		EIA-364-23B	100 milliamperes at 20 millivolts maximum open source voltage	mate	contact resistance	values and observations	less than 60 milli ohms	
2	Durability	1		EIA-364-09C	cycle rate : 300 maximum per hour (manual mate/unmate) mate/unmate 25 times	none	visual examination	values and observations	no evidence of physical damage	
3	Thermal Shock	2		EIA-364-32C Condition 1	test condition : see Appendix 1 recovery : 1/2 hour minimum	mate	visual inspection	results of visual inspection	no evidence of physical damage	
4	LLCR (Low Level Contact Resistance)	1		EIA-364-23B	100 milliamperes at 20 millivolts maximum open source voltage	mate	contact resistance	values and observations	Resistance change: 20 milli ohms MAX	
5	Cyclic Temperature & Humidity	6		EIA-364-31B EIA-364-1000.01, Table 2	conditioning : dry oven at 50C, 24h test condition : see Appendix 2 recovery : 5 h	mate	visual examination	values and observations	no evidence of physical damage	Recovery period can be any amount of time up to 5 hours, that allows connector to return to "Room" temperature condition
6	LLCR (Low Level Contact Resistance)	1		EIA-364-23B	100 milliamperes at 20 millivolts maximum open source voltage	mate	contact resistance	values and observations	Resistance change: 20 milli ohms MAX	
7	Reseating	1		EIA-364-1000.01, Table 2	manually unplug/plug the connector or socket. Perform 3 such cycles.	none	visual examination	values and observations	no evidence of physical damage	
8	LLCR (Low Level Contact Resistance)	1		EIA-364-23B	100 milliamperes at 20 millivolts maximum open source voltage	mate	contact resistance	values and observations	Resistance change: 20 milli ohms MAX	
	making test report	7								
	TOTAL	20								

**Test Group 3**

Test Order	Test	Days	Date	Applicable Standard	Procedure	Condition	Measurement	Document	Criteria	Remark
1	LLCR (Low Level Contact Resistance)	1		EIA-364-23B	100 milliamperes at 20 millivolts maximum open source voltage	mate	contact resistance	values and observations	less than 60 milli ohms	
2	Durability	1		EIA-364-09C	cycle rate : 300 maximum per hour (manual mate/unmate) mate/unmate 25 times	none	visual examination	values and observations	no evidence of physical damage	
3	Temperature Life	2		EIA-364-17, Method A EIA-364-1000.01, Table 9	115C, 24h	mate	visual examination	values and observations	no evidence of physical damage	Recovery time is not specified but should be long enough to allow samples to reach the same "Room" temperature that baseline measurement was taken at
4	LLCR (Low Level Contact Resistance)	1		EIA-364-23B	100 milliamperes at 20 millivolts maximum open source voltage	mate	contact resistance	values and observations	Resistance change: 20 milli ohms MAX	
5	Vibration	1		EIA-364-28, condition VII, Letter D	15min in each 3 directions electrical load condition : 100mA max see Appendix 3	mate	discontinuity	values and observations	less than 1micro second	
6	LLCR (Low Level Contact Resistance)	1		EIA-364-23B	100 milliamperes at 20 millivolts maximum open source voltage	mate	contact resistance	values and observations	Resistance change: 20 milli ohms MAX	
	making test report	7								
	TOTAL	13								

**Test Group 4**

Test Order	Test	Days	Date	Applicable Standard	Procedure	Condition	Measurement	Document	Criteria	Remark
1	LLCR (Low Level Contact Resistance)	1		EIA-364-23B	100 milliamperes at 20 millivolts maximum open source voltage	mate	contact resistance	values and observations	less than 60 milli ohms	
2	Durability	1		EIA-364-09C	cycle rate : 300 maximum per hour (manual mate/unmate) mate/unmate 25 times	none	visual examination	values and observations	no evidence of physical damage	
3	Temperature Life	2		EIA-364-17, Method A EIA-364-1000.01, Table 9	115C, 24h	mate	visual examination	values and observations	no evidence of physical damage	Recovery time is not specified but should be long enough to allow samples to reach the same "Room" temperature that baseline measurement was taken at
4	LLCR (Low Level Contact Resistance)	1		EIA-364-23B	100 milliamperes at 20 millivolts maximum open source voltage	mate	contact resistance	values and observations	Resistance change: 20 milli ohms MAX	
5	Mixed Flowing Gas	7		EIA-364-65A, Class IIA	concentration(ppb) RH% : 70±2 temp C : 30±1 Cl2 : 10±3 NO2 : 200±50 H2S : 10±5 SO2 : 100±20 exposure : 7days recovery : 2hrs minimum	unmate	coupon analysis	values and observations	no defect such as corrosion which impairs the function of connector	
6	LLCR (Low Level Contact Resistance)	1		EIA-364-23B	100 milliamperes at 20 millivolts maximum open source voltage	mate	contact resistance	values and observations	Resistance change: 20 milli ohms MAX	
7	Durability	1		EIA-364-09C	cycle rate : 300 maximum per hour (manual mate/unmate) mate/unmate 1 times	mate	visual examination	values and observations	no evidence of physical damage	
8	LLCR (Low Level Contact Resistance)	1		EIA-364-23B	100 milliamperes at 20 millivolts maximum open source voltage	mate	contact resistance	values and observations	Resistance change: 20 milli ohms MAX	
9	Mixed Flowing Gas	7		EIA-364-65A, Class IIA	concentration(ppb) RH% : 70±2 temp C : 30±1 Cl2 : 10±3 NO2 : 200±50 H2S : 10±5 SO2 : 100±20 exposure : 7days recovery : 2hrs minimum	mate	coupon analysis	values and observations	no defect such as corrosion which impairs the function of connector	
10	LLCR (Low Level Contact Resistance)	1		EIA-364-23B	100 milliamperes at 20 millivolts maximum open source voltage	mate	contact resistance	values and observations	Resistance change: 20 milli ohms MAX	
11	Thermal Disturbance	2		EIA-364-1000.01, Table 4	cycle the connector between 100°C and 60°C 3C ramp : minimum 2C per minutes dwell : minimum 5 minutes	mate	none	none	none	
12	LLCR (Low Level Contact Resistance)	1		EIA-364-23B	100 milliamperes at 20 millivolts maximum open source voltage	mate	contact resistance	values and observations	Resistance change: 20 milli ohms MAX	
13	Durability	1		EIA-364-09C	cycle rate : 300 maximum per hour (manual mate/unmate) mate/unmate 1 times	mate	visual examination	values and observations	no evidence of physical damage	
14	LLCR (Low Level Contact Resistance)	1		EIA-364-23B	100 milliamperes at 20 millivolts maximum open source voltage	mate	contact resistance	values and observations	Resistance change: 20 milli ohms MAX	
	making test report	7								
	TOTAL	32								

**Test Group 5**

Test Order	Test	Days	Date	Applicable Standard	Procedure	Condition	Measurement	Document	Criteria	Remark
1	Dielectric withstanding voltage	1		EIA-364-20B	AC 150V for 60 seconds different contacts than LLCR	mate	voltage	values and observations	No disruptive discharge No leakage current : 2mA MAX	
2	LLCR (Low Level Contact Resistance)	1		EIA-364-09C	100 milliamperes at 20 millivolts maximum open source voltage	mate	contact resistance	values and observations	less than 60 milli ohms	
3	Durability	1		EIA-364-17, Method A EIA-364-1000.01, Table 9	cycle rate : 300 maximum per hour (manual mate/unmate) mate/unmate 100 times	none	visual examination	values and observations	no evidence of physical damage	Recovery time is not specified but should be long enough to allow samples to reach the same "Room" temperature that baseline measurement was taken at
4	LLCR (Low Level Contact Resistance)	1		EIA-364-23B	100 milliamperes at 20 millivolts maximum open source voltage	mate	contact resistance	values and observations	Resistance change: 20 milli ohms MAX	
5	Dielectric withstanding voltage	1		EIA-364-20B	AC 150V for 60 seconds different contacts than LLCR	mate	voltage	values and observations	No disruptive discharge No leakage current : 2mA MAX	
	making test report	7								
	TOTAL	12								

**Test Group 6 \*1**

Test Order	Test	Days	Date	Applicable Standard	Procedure	Condition	Measurement	Document	Criteria	Remark
1	Temperature Rise	1		EIA-364-70B	0.75A applied to Pin no. a1 to a8 b1 to b8 a77 to a84 b77 to b84 0.3A applied to Pin no. a9 to a76 b9 to b76	mate	Temperature rise	values and observations	No more than 30°C rise in temperature	

**\* Revision History**

Revision No.	Description (Major change)	Date
0	Initial release	11/18/2009
Re_1	Added Temperature rise test in Group 6	01/06/2010