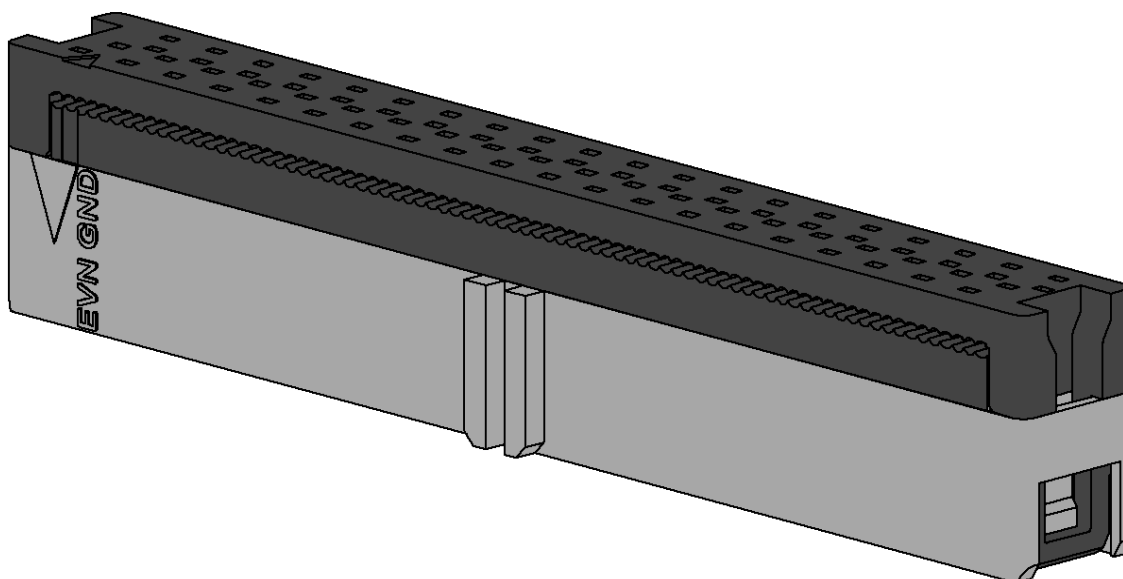

SPECIFICATION
AND PERFORMANCE OF
ATAS™ CONNECTOR SERIES
(Patented)



(U.S. patent #5,902,147. ATAS is a trademark of Circuit Assembly Corp.)

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NOTE: *Unless otherwise noted in this specification, all units of measure are metric.
Decimal dimensions are (reference)*

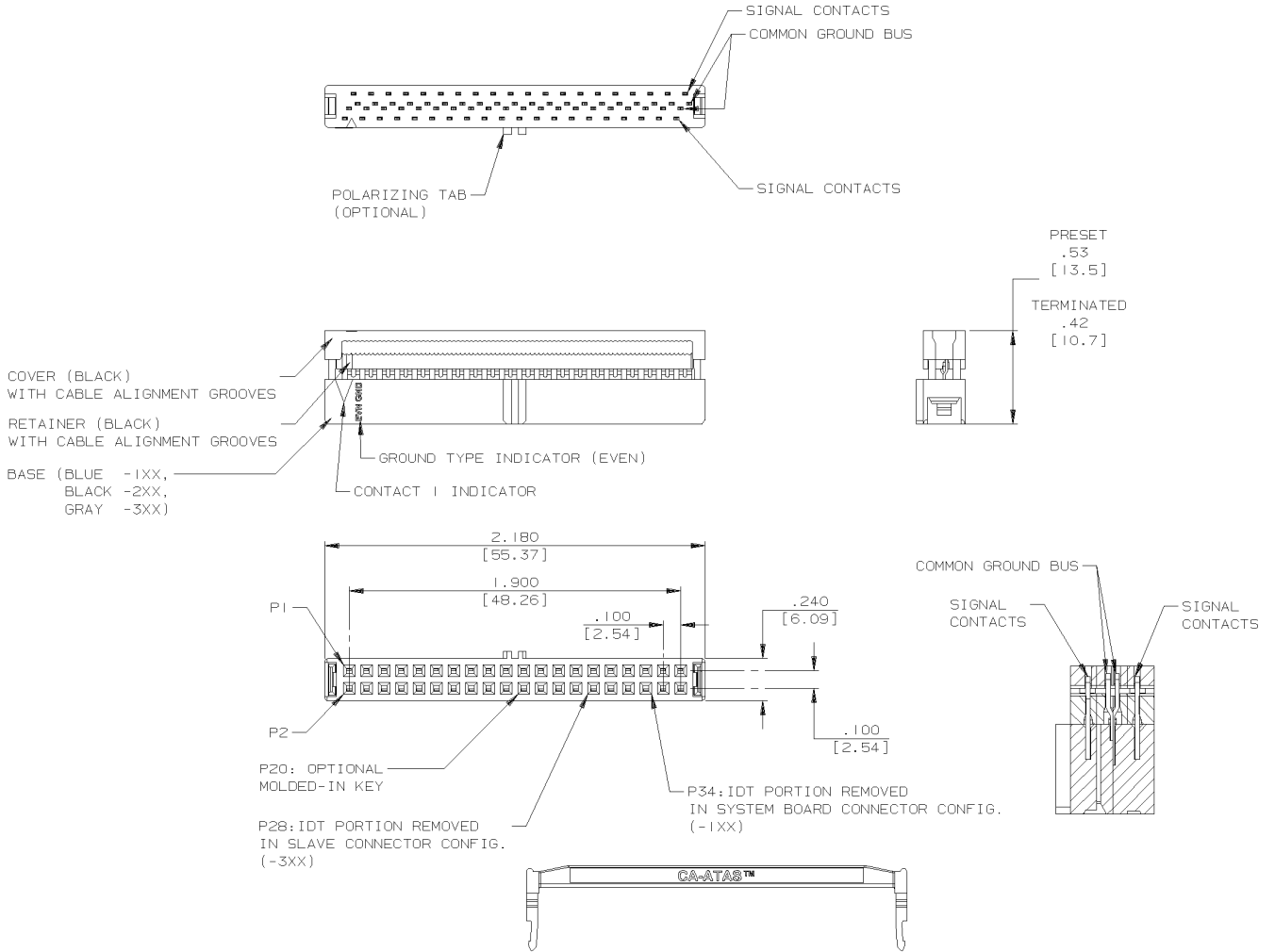
1.0 SCOPE

- 1.1 This specification establishes the performance, test and quality requirements for the ATASJ series of Insulation Displacement Connector sockets using 1.27 pitch IDT flat ribbon cable and interfaces with the standard IDE 2.54 X 2.54 grid header (pins being 0.635 square). The internal IDT ground bus bar uses 50% of the IDT flat ribbon cable conductors (**G-s-G-s-G-s** etc.) and is also programmable to make internal connections to a number of selective Asignal@ contacts.
- 1.2 Should any difference occur between this specification and any document specified in Section 2, this specification shall prevail. In addition, if any difference occurs between this specification and the individual part drawings, then the part drawings shall prevail.

2.0 APPLICABLE DOCUMENTS

Reference documents listed below shall be the latest revision unless otherwise specified. Should a conflict occur between this specification and any of the listed documents then this specification shall prevail.

EIA-364	Electrical Connector Test Procedures Including Environmental Classifications.
SFF-8049	ATA Cable Assembly Requirements
610191	CA Drawing - ATAS Connector Assembly



STRAIN RELIEF
SR40ATAS
(ORDERED SEPARATELY)

ORDERING NOMENCLATURE:

CA - 40 ATAS - X - X X X

NUMBER OF CONTACT POS _____

AT ATTACHMENT SOCKET _____

PLATING: _____

A = CONTACT AREA: GOLD FLASH
 C = CONTACT AREA: .000015 [.00038] GOLD
 D = CONTACT AREA: .000005 [.00013] GOLD
 OVER .000075 [.00191] NICKEL
 IDC AREA: .000150 [.00381] TIN

STYLE NUMBER: _____

1 = SYSTEM BOARD CONNECTOR (BLUE, EVEN GROUND)
 2 = PRIMARY CONNECTOR (BLACK, EVEN GROUND)
 3 = SECONDARY CONNECTOR (GRAY, EVEN GROUND)
 4 = SYSTEM BOARD CONNECTOR (BLUE, ODD GROUND)
 5 = PRIMARY CONNECTOR (BLACK, ODD GROUND)
 6 = SECONDARY CONNECTOR (GRAY, ODD GROUND)

POLARIZATION: _____

0 = NO POLARIZING TAB
 1 = SINGLE POLARIZING TAB

KEYPIN: _____

0 = POSITION 20 OPEN
 1 = POSITION 20 MOLDED OVER

	CONT. NO.	SIGNAL NAME	WIRE NO.	80 COND. CABLE	WIRE NO.	CONT. NO.	SIGNAL NAME	
	1	RESET	1		21	11	DD3	
X		GROUND	2		22		GROUND	X
X	2	GROUND	3		23	12	DD12	
X		GROUND	4		24		GROUND	X
	3	DD7	5		25	13	DD2	
X		GROUND	6		26		GROUND	X
X	4	DD8	7		27	14	DD13	
X		GROUND	8		28		GROUND	X
	5	DD6	9		29	15	DD1	
X		GROUND	10		30		GROUND	X
	6	DD9	11		31	16	DD14	
X		GROUND	12		32		GROUND	X
	7	DD5	13		33	17	DD0	
X		GROUND	14		34		GROUND	X
	8	DD10	15		35	18	DD15	
X		GROUND	16		36		GROUND	X
X	9	DD4	17		37	19	GROUND	X
X		GROUND	18		38		GROUND	X
	10	DD11	19		39	20	(KEYPIN)	
X		GROUND	20		40		GROUND	X

	CONT. NO.	SIGNAL NAME	WIRE NO.	80 COND. CABLE	WIRE NO.	CONT. NO.	SIGNAL NAME	
	21	DMARQ	41		61	31	INTRQ	
X		GROUND	42		62		GROUND	X
X	22	GROUND	43		63	32	IQCS16	
X		GROUND	44		64		GROUND	X
	23	DIOW	45		65	33	DAI	
X		GROUND	46		66		GROUND	X
X	24	GROUND	47		67	34	GROUND	X
X		GROUND	48		68		GROUND	X
	25	DIOR	49		69	35	DAO	
X		GROUND	50		70		GROUND	X
X	26	GROUND	51		71	36	DA2	
X		GROUND	52		72		GROUND	X
	27	IORDY	53		73	37	CS1FX	
X		GROUND	54		74		GROUND	X
	28	CSEL	55		75	38	CS3FX	
X		GROUND	56		76		GROUND	X
	29	DMACK	57		77	39	DASP	
X		GROUND	58		78		GROUND	X
X	30	GROUND	59		79	40	GROUND	X
X		GROUND	60		80		GROUND	X

Figure 2a -- 1xx Connector Wiring Scheme

	CONT. NO.	SIGNAL NAME	WIRE NO.	80 COND. CABLE	WIRE NO.	CONT. NO.	SIGNAL NAME	
	1	RESET	1		21	11	DD3	
X		GROUND	2		22		GROUND	X
X	2	GROUND	3		23	12	DD12	
X		GROUND	4		24		GROUND	X
	3	DD7	5		25	13	DD2	
X		GROUND	6		26		GROUND	X
X	4	DD8	7		27	14	DD13	
X		GROUND	8		28		GROUND	X
	5	DD6	9		29	15	DD1	
X		GROUND	10		30		GROUND	X
	6	DD9	11		31	16	DD14	
X		GROUND	12		32		GROUND	X
	7	DD5	13		33	17	DD0	
X		GROUND	14		34		GROUND	X
	8	DD10	15		35	18	DD15	
X		GROUND	16		36		GROUND	X
	9	DD4	17		37	19	GROUND	X
X		GROUND	18		38		GROUND	X
	10	DD11	19		39	20	(KEYPIN)	
X		GROUND	20		40		GROUND	X

	CONT. NO.	SIGNAL NAME	WIRE NO.	80 COND. CABLE	WIRE NO.	CONT. NO.	SIGNAL NAME	
	21	DMARQ	41		61	31	INTRQ	
X		GROUND	42		62		GROUND	X
X	22	GROUND	43		63	32	IQCS16	
X		GROUND	44		64		GROUND	X
	23	DIOW	45		65	33	DAI	
X		GROUND	46		66		GROUND	X
X	24	GROUND	47		67	34	EDIAG	
X		GROUND	48		68		GROUND	X
	25	DIOR	49		69	35	DAO	
X		GROUND	50		70		GROUND	X
X	26	GROUND	51		71	36	DA2	
X		GROUND	52		72		GROUND	X
	27	IORDY	53		73	37	CS1FX	
X		GROUND	54		74		GROUND	X
	28	CSEL	55		75	38	CS3FX	
X		GROUND	56		76		GROUND	X
	29	DMACK	57		77	39	DASP	
X		GROUND	58		78		GROUND	X
X	30	GROUND	59		79	40	GROUND	X
X		GROUND	60		80		GROUND	X

Figure 2b -- 2xx Connector Wiring Scheme

	CONT. NO.	SIGNAL NAME	WIRE NO.	80 COND. CABLE	WIRE NO.	CONT. NO.	SIGNAL NAME	
	1	RESET	1		21	11	DD3	
X		GROUND	2		22		GROUND	X
X	2	GROUND	3		23	12	DD12	
X		GROUND	4		24		GROUND	X
	3	DD7	5		25	13	DD2	
X		GROUND	6		26		GROUND	X
X	4	DD8	7		27	14	DD13	
X		GROUND	8		28		GROUND	X
	5	DD6	9		29	15	DD1	
X		GROUND	10		30		GROUND	X
	6	DD9	11		31	16	DD14	
X		GROUND	12		32		GROUND	X
	7	DD5	13		33	17	DD0	
X		GROUND	14		34		GROUND	X
	8	DD10	15		35	18	DD15	
X		GROUND	16		36		GROUND	X
	9	DD4	17		37	19	GROUND	X
X		GROUND	18		38		GROUND	X
	10	DD11	19		39	20	(KEYPIN)	
X		GROUND	20		40		GROUND	X

	CONT. NO.	SIGNAL NAME	WIRE NO.	80 COND. CABLE	WIRE NO.	CONT. NO.	SIGNAL NAME	
	21	DMARQ	41		61	31	INTRQ	
X		GROUND	42		62		GROUND	X
X	22	GROUND	43		63	32	IQCS16	
X		GROUND	44		64		GROUND	X
	23	DIOW	45		65	33	DAI	
X		GROUND	46		66		GROUND	X
X	24	GROUND	47		67	34	P-DIAG	
X		GROUND	48		68		GROUND	X
	25	DIOR	49		69	35	DAO	
X		GROUND	50		70		GROUND	X
X	26	GROUND	51		71	36	DA2	
X		GROUND	52		72		GROUND	X
	27	IORDY	53		73	37	CS1FX	
X		GROUND	54		74		GROUND	X
	28	(REMOVED)	55		75	38	CS3FX	
X		GROUND	56		76		GROUND	X
	29	DMACK	57		77	39	DASP	
X		GROUND	58		78		GROUND	X
X	30	GROUND	59		79	40	GROUND	X
X		GROUND	60		80		GROUND	X

Figure 2c -- 3xx Connector Wiring Scheme

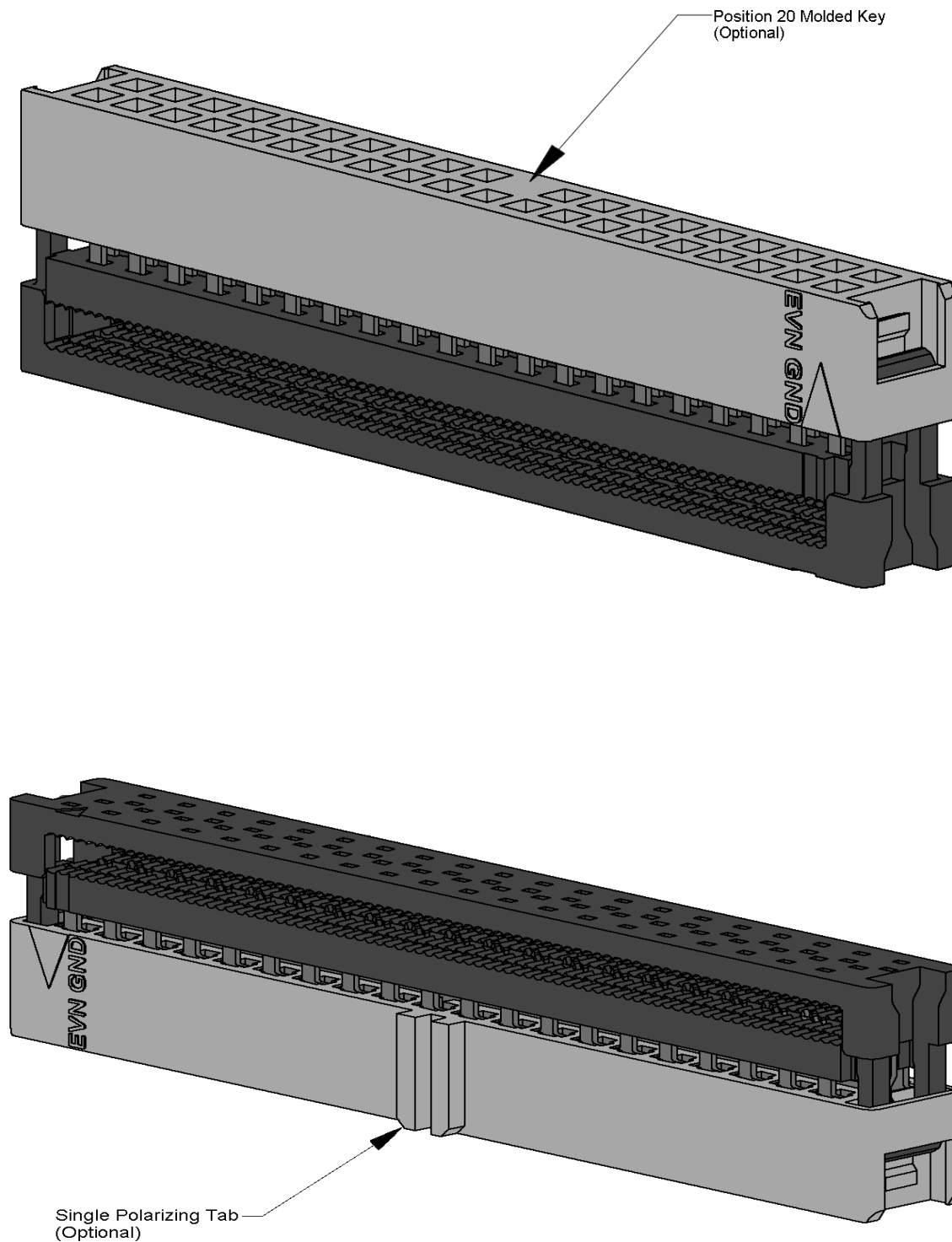


Figure 3 – ATAS Connector Polarization Options

3.0 APPLICATION FEATURES

3.1 MATERIALS

- Housing - Base, Retainer and Cover - 30% Glass Filled Polyester (PBT), UL94V-0.
Systems Board Connector - Base color: Blue
Cover & Retainer color: Black
Device 0 - Primary Conn. - Base, Retainer & Cover color: Black
Device 1- Slave Connector - Base color: Gray
Cover & Retainer color: Black
- Contact - Copper Alloy, 0.38 μ m [.000015] gold in contact area,
3.81 μ m [.000150] tin in IDT area,
all over 1.91 μ m [.000075] min. nickel.
- Bus Bar - Copper Alloy, 3.18 μ m [.000150] Tin over 1,91 μ m [.000075] min.
nickel.

3.2 IDT CABLE

Connector will terminate 30AWG solid and stranded 0.635mm (.025") centerline flat unshielded cable and single conductor cable having FEP, TPE, TPO, or PVC insulation.

3.3 RATINGS

- Voltage - 30 VAC. Rating is based on testing approvals by UL, C-UL and CSA Wiring Harness Component Programs.
- Current - Signal contacts - 0.5 Amp per contact unless limited by the cable being used.
Ground Bus - 3.5 Amps
- Temperature - -55°C to 105°C unless limited by the cable being used.

3.4 NORMAL FORCES

- Contact to Mating Pin - 200 grams typical - 110 grams minimum.
- Bus Bar to Contact - 1100 grams typical - 400 grams minimum.

3.5 RECOGNITION AND CERTIFICATION

UL: Product Category ECBT2
Connectors For Use In Data, Signal, Control and Power Applications
File No. E95981

C-UL: Product Category ECBT8
Connectors For Use In Data, Signal, Control and Power Applications
Certified For Canada
File No. E95981

4.0 CHARACTERISTICS

Unless specified in the test sequences show in Sect. 5, all tests shall be performed at current atmospheric conditions.

4.1 ENVIRONMENTAL

4.1.1 Thermal Shock

Condition: EIA 364-32, subject mated connectors to 5 cycles between -55°C and 105°C.

There shall be no physical damage and shall meet requirements of subsequent tests.

4.1.2 Humidity-temperature Cycling

Condition: EIA364-31. Method III, Test Condition B, subject mated connectors to 10 cycles between 25°C and 65°C at 95% relative humidity.

There shall be no physical damage and shall meet requirements of subsequent tests.

4.1.3 Temperature Life

Condition: EIA364-17, Test Condition 4, subject mated connectors to 105°C for 1000 hours.

There shall be no physical damage and shall meet requirements of subsequent tests.

4.1.4 Mixed Flowing Gas

Condition: EIA364-65, Environmental Class II, for 14 days, mated connectors.

There shall be no physical damage and shall meet requirements of subsequent tests.

4.2 ELECTRICAL

4.2.1 Withstanding Voltage

Condition: EIA364-20, Condition B.

Between adjacent contacts of mated connectors: 250Vrms at sea level

4.2.2 Low Level Contact Resistance (LLCR)

Conditions: EIA364-23, except 100mA maximum test current and 50mV maximum open circuit voltage. Initial Low Level Contact Resistance shall not exceed 35mΩ. Delta LLCR shall not exceed 15mΩ.

4.2.3 Insulation Resistance

Conditions: EIA364-21, test voltage 250Vdc

Between adjacent contacts of mated connectors:
500 Megohms minimum.

4.3 MECHANICAL

4.3.1 Durability Cycling

Conditions: EIA364-09, mate and unmate connectors for 500 cycles at a rate of 600 cycles per hour.

There shall be no physical damage and shall meet requirements of subsequent tests.

4.3.2 Mating and Unmating Force

Conditions: EIA364-13, at a rate of 12.7mm/minute

Force to mate: 225 grams maximum per contact. (measured using opposing pairs of contacts).

Force to unmate: 80 grams minimum per contact. (measured using opposing pairs of contacts).

4.3.3 Vibration

Condition: EIA364-28, subject mated connectors to 10 to 500Hz of random vibration at 3.14g rms for 1 hour in each of 3 mutually perpendicular planes.

There shall be no discontinuities of 1μ sec. duration or longer.

4.3.4 Physical Shock

Condition: EIA364-27, test Condition A, subject mated connectors to 30 g's peak acceleration, half sine wave pulses of 11 milliseconds, 3 shocks applied along 3 mutually perpendicular planes, total 18 shocks.

There shall be no discontinuities of 1μ sec. duration or longer.

4.3.5 Cable Flexing

Condition: EIA364-41, test Condition II, Method I, for 100 cycles through an included angle of 90°. A load of 1Kg is attached to the loose end of the cable which is 200mm to 300mm long.

There shall be no discontinuities of 1μ sec. duration or longer.

5.0 TEST SCHEDULE

5.1 GENERAL

This test schedule shows the tests and the order in which they will be carried out and the requirements to be met in each test.

Unless otherwise specified, mated sets of connectors shall be tested. A mated set of connectors is called a Specimen@. After completion of Group 1 (Preliminary Inspection) the specimens will be equally divided and assigned to each of the four remaining Test Groups. Care shall be taken to insure that the mated specimen remain together during the complete test sequence, i.e. when unmating is necessary for a certain test, the same connectors shall be re-mated for the subsequent testing within that Group.

Before testing commences, the connectors shall be stored for at least 24 hours in the non-inserted state under normal climatic conditions for testing.

In the following test sequence tables, where an EIA test is specified without a letter suffix, the latest approved version of that shall be used.

5.2 TEST SAMPLES

5.2.1 Test Sample Preparation

SOCKET & PLUG CONNECTORS: Samples are removed at random from CA Final Inspection (current production) and are prepared according to the requirements and severity of the tests to be conducted as specified in ANSI/EIA 364 or other referenced documents.

5.3 TEST SEQUENCES & PERFORMANCE

5.3.1 TEST GROUP 1 - General Examination

Representative specimens are subjected to the following Visual Inspection and Examination to determine that the connectors are acceptable to be included in the following six (6) Test Groups.

Minimum 25 specimens - Permitted defects zero

Test Phase	Test			Measurements to be Performed		
	Title	EIA 364 Test No.	Severity or condition of test	Title	EIA 364 Test No.	Comments/ Requirements
1.1	General Examination		Unmated Connectors	Visual Inspection	18	There shall be NO defects that would impair normal operation
				Examination of dimensions and plating thickness	23	Dimensions shall comply with this document

Fig. 4 - Test and Performance Group 1

5.3.2 TEST GROUP 2 - Mating Force, Durability, Vibration, Shock, and Unmating Force.

Minimum 5 specimens - Permitted defects zero

Test Seq.	Test		Requirements
	Title	EIA 364	
2.1	Mating Force	13	225g max per contact. (measured using opposing pairs of contacts). 40 pos. = 9.00Kg max.
2.2	Initial Low Level Contact Resistance (LLCR)	23	50mV max open circuit at 100mA max. <35mΩ
2.3	Durability	09	Mate & unmate specimen 500 cy at a rate of 600 cycles/hour. There shall be no physical damage
2.4	Vibration	28	No discontinuities of 1μs or longer duration. EIA364-46
2.5	Shock	27	No discontinuities of 1μs or longer duration. EIA364-46
2.6	Change in Low Level Contact Resistance (□LLCR)	23	Same as 2.2 Delta LLCR shall not exceed 15mΩ
2.7	Unmating Force	13	80g min per contact. (measured using opposing pairs of contacts). 40 pos. = 3.2Kg min.
2.8	General Examination	18	Unmated connectors. Visual and dimensional inspection. There shall be no defects to impair normal operation.

Fig. 5 - Test and Performance Group 2

5.3.3 TEST GROUP 3 - Temperature Life and Vibration.

Minimum 5 specimens - Permitted defects zero

Test Seq.	Test		Requirements
	Title	EIA 364	
3.1	Initial Low Level Contact Resistance (LLCR)	23	50mV max open circuit at 100mA max. <35mΩ
3.2	Temperature Life	17	Condition 4, 105°C for 1000hr There shall be no physical damage.
3.3	Change in Low Level Contact Resistance (□LLCR)	23	Same as 3.1 Delta shall not exceed 15mΩ
3.4	Vibration	28	No discontinuities of 1μs or longer duration. EIA364-46
3.5	Change in Low Level Contact Resistance (□LLCR)	23	Same as 3.1 Delta shall not exceed 15mΩ
3.6	General Examination	18	Unmated connectors. Visual and dimensional inspection. There shall be no defects to impair normal operation.

Fig. 6 - Test and Performance Group 3

5.3.4 TEST GROUP 4 - Thermal Shock and Humidity- Temperature cycling.
Minimum 5 specimens - Permitted defects zero

Test Seq.	Test		Requirements
	Title	EIA 364	
4.1	Insulation Resistance	21	Test Voltage 250Vrms. 500MΩ min.
4.2	Dielectric Withstanding Voltage	20	Test voltage 250Vdc for 60 sec
4.3	Initial Low Level Contact Resistance (LLCR)	23	50mV max open circuit at 100mA max. <35mΩ
4.4	Thermal Shock	32	5 cycles between -55°C and 105°C. There shall be no physical damage.
4.5	Change in Low Level Contact Resistance (□LLCR)	23	Same as 4.3 Delta shall not exceed 15mΩ
4.6	Humidity-temp. Cycling	31	10 cycles between 25°C & 65°C at 95%rh for 240hr
4.7	Change in Low Level Contact Resistance (□LLCR)	23	Same as 4.3 Delta shall not exceed 15mΩ
4.8	Insulation Resistance	21	Test Voltage 250Vrms. 500 MΩ min.
4.9	Dielectric Withstanding Voltage	20	Test voltage 250Vdc for 60 sec
4.10	General Examination	18	Unmated connectors. Visual and dimensional inspection. There shall be no defects to impair normal operation.

Fig. 7 - Test and Performance Group 4

5.3.5 TEST GROUP 5 - Cable Flexing.

Minimum 5 specimens - Permitted defects zero

Test Seq.	Test		Requirements
	Title	EIA 364	
5.1	Cable Flexing	41	Condition II, Method I, for 100 cycles through an included angle of 90°. A load of 1Kg is attached to the free end of the cable which is 200mm to 300mm long. No discontinuities of 1µs or longer duration. EIA364-46
5.2	General Examination	18	Unmated connectors. Visual and dimensional inspection. There shall be no defects to impair normal operation.

Fig. 8 - Test and Performance Group 5

5.3.6 TEST GROUP 6 - Mixed Flowing Gas.

Minimum 5 specimens - Permitted defects zero

Test Seq.	Test		Requirements
	Title	EIA 364	
6.1	Initial Low Level Contact Resistance (LLCR)	23	50mV max open circuit at 100mA max. <35mΩ
6.2	Durability Pre conditioning	09	25 cycles at rate of 600 cycles per hour. There shall be no physical damage.
6.3	Mixed Flowing Gas	65	Class II for 14 days. There shall be no physical damage.
6.4	Change in Low Level Contact Resistance (ΔLLCR)	23	Same as 6.1 Delta shall not exceed 15mΩ
6.5	General Examination	18	Unmated connectors. Visual and dimensional inspection. There shall be no defects to impair normal operation.

Fig. 9 - Test and Performance Group 6

6.0 QUALITY PROVISIONS

6.1 ACCEPTANCE

Acceptance of the ATAS™ Series of connectors is based on meeting the Performance Criteria as detailed in Section 5.3 of this specification.

6.2 RE-QUALIFICATION

Re-qualification will be a requirement when there are significant changes to form, fit or function, materials, or changes to production process that would effect the performance requirements of these products.

6.3 RE-TESTING

Connectors stored for a period of more than 36 months after the release of the lot shall be tested prior to delivery according to Test & Performance Group 3 requirements.

6.4 INSPECTION DATA

Inspection and test data shall be recorded, evaluated, and maintained as evidence of performance to these provisions.

Initiated By:	Date:	Engineering Approval:	Date:	Quality Approval:	Date
Signature on file	3-03-04	Signature on file	3-03-04	Signature on file	3-03-04

REV.	DESCRIPTION	DATE	INITIALS
A	INITIAL RELEASE	9-15-97	J.McA
B	SEE DO # 2889	12-5-97	J.McA
C	SEE DO # 3132	7-15-98	J.McA
D	SEE DO # 3640	6-28-99	A.J.
E	SEE DO # 4096	7-24-00	A.J.
F	SEE DO # 5413	3- 02-04	I.M.
G	SEE DO # 5816	7-05-05	L.F.