1. Scope

This document describes the specification applied to turbine instruments for Tanjung Jati B Expansion (Jawa-4)Coal Fired Steam Power Plant Project, Indonesia.

2. Specification

Item	Specification	Remarks
Type	Electromagnetic	
Body Material	Stainless Steel	
Process connection	5/8-18 UNF-2A	
Ambient temperature	-55 ~ 107℃	
Gap between sensor and tooth (air gap)	2mm	Air Gap will be Described in Mechanical DWG and also adjusted at commissioning stage
Voltage output	70085-1010-523 TO BE 3.4 VOLTS PEAK MINIMUM WHEN SENSING A 20 PITCH, 30 TOOTH STEEL GEAR WITH A 100,000 LOAD, SHUNTED BY A 250 pF CAPACITOR, AN AIR GAP OF .030 INCHES [.762 MM] AND A SURFACE SPEED OF 500 IPS [12.7 M/S] (SEE WIRING SCHEMATIC FIGURE 1). 70085-1010-528 TO BE 21.5 V MIN P-P WHEN SENSING A 12 TOOTH 8 PITCH STEEL GEAR AT A SPPED OF 500 IPS (12.7 M/S), AIRGAP OF .03 (0.762mm) WITH A 1250 OHM LOAD SHUNTED BY 250 pF, (REF STANDARD OUTPUT 75 V MIN P-P WHEN SENSING A 12 TOOTH 8 PITCH GEAR WITH A 1250 OHM LOAD SHUNTED BY 250 pF, AIRGAP .005 (0.127 mm) AND A SURFACE SPEED OF 1000 IPS (25.4 M/S).	As per specification by vender document

No	INSTR TAG NO.	SERVICE DESCRIPTION	P&ID DRAWING				OPERATION CONDITIONS							CALIBRATED RNG			INSTRUMENT TYPE	Process connection size	Electrical Conduit Size	MANUFACTURER DETAILS		REFERENCES			REVISION	REMARKS
			DWG No.	LOCATION	REV	Line No.	Fluid	Flow (t/h)		Press (barg)		Temp (°C)		Lower	Upper	EU				Make	Model	Location Drawing No.	Data Sheet Drawing No.	Hook up Drawing No.		
								Nor Oprt	Max Des	Nor Oprt	Max Des	Nor Oprt	Max Des													
1	50MAY10 CS005	TURBINE SPEED 1	TJB56-L1-OFF-C-MAA-M-DSD-2033(2/5)	B-8	1	N/A	N/A				ATM		79	0	3600	rpm	SE	5/8-18 UNF	PLUG CONNECTOR	AI-TEK	70085-1010-528		TJB56-L1-OFF-C-CB-I-DAS-5725		3	N/A N/A N/A N/A N/A
2	50MAY10 CS006	TURBINE SPEED 2	TJB56-L1-OFF-C-MAA-M-DSD-2033(2/5)	B-8	1	N/A	N/A				ATM		79	0	3600	rpm	SE	5/8-18 UNF	PLUG CONNECTOR	AI-TEK	70085-1010-528		TJB56-L1-OFF-C-CB-I-DAS-5725		3	N/A N/A N/A N/A N/A
3	50MAY10 CS007	TURBINE SPEED 3	TJB56-L1-OFF-C-MAA-M-DSD-2033(2/5)	B-8	1	N/A	N/A				ATM		79	0	3600	rpm	SE	5/8-18 UNF	PLUG CONNECTOR	AI-TEK	70085-1010-528		TJB56-L1-OFF-C-CB-I-DAS-5725		3	N/A N/A N/A N/A N/A
4	50MAY10 CS001	TURBINE OVER SPEED 1	TJB56-L1-OFF-C-MAA-M-DSD-2033(2/5)	B-7	1	N/A	N/A				ATM		79	0	3600	rpm	SE	5/8-18 UNF	PLUG CONNECTOR	AI-TEK	70085-1010-528		TJB56-L1-OFF-C-CB-I-DAS-5725		3	N/A N/A N/A N/A N/A
5	50MAY10 CS002	TURBINE OVER SPEED 2	TJB56-L1-OFF-C-MAA-M-DSD-2033(2/5)	B-7	1	N/A	N/A				ATM		79	0	3600	rpm	SE	5/8-18 UNF	PLUG CONNECTOR	AI-TEK	70085-1010-528		TJB56-L1-OFF-C-CB-I-DAS-5725		3	N/A N/A N/A N/A N/A
6	50MAY10 CS003	TURBINE OVER SPEED 3	TJB56-L1-OFF-C-MAA-M-DSD-2033(2/5)	B-7	1	N/A	N/A				ATM		79	0	3600	rpm	SE	5/8-18 UNF	PLUG CONNECTOR	AI-TEK	70085-1010-528		TJB56-L1-OFF-C-CB-I-DAS-5725		3	N/A N/A N/A N/A N/A
7	50LAY10 CS001	BFPT A SPEED 1	TJB56-L1-OFF-C-XAA-M-DSD-2034	C-2	2	N/A	N/A				ATM		79	0	8000	rpm	SE	5/8-18 UNF	CONNECTOR	AI-TEK	70085-1010-523		TJB56-L1-OFF-C-CB-I-DAS-5725		3	N/A N/A N/A N/A N/A
8	50LAY10 CS002	BFPT A SPEED 2	TJB56-L1-OFF-C-XAA-M-DSD-2034	C-2	2	N/A	N/A				ATM		79	0	8000	rpm	SE	5/8-18 UNF	CONNECTOR	AI-TEK	70085-1010-523		TJB56-L1-OFF-C-CB-I-DAS-5725		3	N/A N/A N/A N/A N/A
9	50LAY10 CS003	BFPT A SPEED 3	TJB56-L1-OFF-C-XAA-M-DSD-2034	C-2	2	N/A	N/A				ATM		79	0	8000	rpm	SE	5/8-18 UNF	CONNECTOR	AI-TEK	70085-1010-523		TJB56-L1-OFF-C-CB-I-DAS-5725		3	N/A N/A N/A N/A N/A
10	50LAY10 CS004	BFPT A OVER SPEED 1	TJB56-L1-OFF-C-XAA-M-DSD-2034	D-2	2	N/A	N/A				ATM		79	0	8000	rpm	SE	5/8-18 UNF	CONNECTOR	AI-TEK	70085-1010-523		TJB56-L1-OFF-C-CB-I-DAS-5725		3	N/A N/A N/A N/A N/A
11	50LAY10 CS005	BFPT A OVER SPEED 2	TJB56-L1-OFF-C-XAA-M-DSD-2034	D-2	2	N/A	N/A				ATM		79	0	8000	rpm	SE	5/8-18 UNF	CONNECTOR	AI-TEK	70085-1010-523		TJB56-L1-OFF-C-CB-I-DAS-5725		3	N/A N/A N/A N/A N/A
12	50LAY10 CS006	BFPT A OVER SPEED 3	TJB56-L1-OFF-C-XAA-M-DSD-2034	D-2	2	N/A	N/A				ATM		79	0	8000	rpm	SE	5/8-18 UNF	CONNECTOR	AI-TEK	70085-1010-523		TJB56-L1-OFF-C-CB-I-DAS-5725		3	N/A N/A N/A N/A N/A
13	50LAY20 CS001	BFPT B SPEED 1	TJB56-L1-OFF-C-XAA-M-DSD-2034	C-2	2	N/A	N/A				ATM		79	0	8000	rpm	SE	5/8-18 UNF	CONNECTOR	AI-TEK	70085-1010-523		TJB56-L1-OFF-C-CB-I-DAS-5725		3	N/A N/A N/A N/A N/A
14	50LAY20 CS002	BFPT B SPEED 2	TJB56-L1-OFF-C-XAA-M-DSD-2034	C-2	2	N/A	N/A				ATM		79	0	8000	rpm	SE	5/8-18 UNF	CONNECTOR	AI-TEK	70085-1010-523		TJB56-L1-OFF-C-CB-I-DAS-5725		3	N/A N/A N/A N/A N/A
15	50LAY20 CS003	BFPT B SPEED 3	TJB56-L1-OFF-C-XAA-M-DSD-2034	C-2	2	N/A	N/A				ATM		79	0	8000	rpm	SE	5/8-18 UNF	CONNECTOR	AI-TEK	70085-1010-523		TJB56-L1-OFF-C-CB-I-DAS-5725		3	N/A N/A N/A N/A N/A
16	50LAY20 CS004	BFPT B OVER SPEED 1	TJB56-L1-OFF-C-XAA-M-DSD-2034	D-2	2	N/A	N/A				ATM		79	0	8000	rpm	SE	5/8-18 UNF	CONNECTOR	AI-TEK	70085-1010-523		TJB56-L1-OFF-C-CB-I-DAS-5725		3	N/A N/A N/A N/A N/A
17	50LAY20 CS005	BFPT B OVER SPEED 2	TJB56-L1-OFF-C-XAA-M-DSD-2034	D-2	2	N/A	N/A				ATM		79	0	8000	rpm	SE	5/8-18 UNF	CONNECTOR	AI-TEK	70085-1010-523		TJB56-L1-OFF-C-CB-I-DAS-5725		3	N/A N/A N/A N/A N/A
18	50LAY20 CS006	BFPT B OVER SPEED 3	TJB56-L1-OFF-C-XAA-M-DSD-2034	D-2	2	N/A	N/A				ATM		79	0	8000	rpm	SE	5/8-18 UNF	CONNECTOR	AI-TEK	70085-1010-523		TJB56-L1-OFF-C-CB-I-DAS-5725		3	N/A N/A N/A N/A N/A

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APVD
	A	ORIGINAL RELEASE PER C.O.6273	7/22/09	ER

1.0 SCOPE: THIS PRODUCT SPECIFICATION COVERS THE REQUIREMENTS FOR AI-TEK SPEED SENSOR PN 70085-1010-523.

2.0 APPLICABLE DOCUMENTS: THE FOLLOWING DOCUMENTS FORM A PART OF THIS SPECIFICATION TO THE EXTENT SPECIFIED WITHIN:
676-0122-001 DATE CODE MARKING REQUIREMENTS
900-0110-001 ACCEPTANCE TEST PROCEDURE

3.0 REQUIREMENTS:

3.1 GENERAL: THIS SPECIFICATION DELINEATES ALL FUNCTIONAL/DIMENSIONAL REQUIREMENTS FOR AI-TEK SPEED SENSOR PN 70085-1010-523.

3.2 CHARACTERISTICS:

3.2.1 PHYSICAL:

3.2.1.1 CONFIGURATION: OUTLINE & MOUNTING DIMENSIONS AS SHOWN.

3.2.1.2 MOUNTING TORQUE: THE SENSOR INSTALLED MOUNTING TORQUE SHALL NOT EXCEED 200 IN-LB.

3.2.2 ELECTRICAL: ALL MEASUREMENTS AT 25°C UNLESS OTHERWISE SPECIFIED.

3.2.2.1 OUTPUT: VOLTAGE OUTPUT TO BE 3.4 VOLTS PEAK TO PEAK MINIMUM WHEN SENSING A 20 PITCH, 30 TOOTH STEEL GEAR WITH A 100,000 OHM LOAD, SHUNTED BY A 250 pF CAPACITOR, AN AIR GAP OF .030 INCHES [.762 MM] AND A SURFACE SPEED OF 500 IPS [12.7 M/S] (SEE WIRING SCHEMATIC FIGURE 1).

3.2.2.2 DC RESISTANCE: 100-130 OHMS

3.2.2.3 INDUCTANCE: (33 mH)

3.2.2.4 POLARITY: PIN "B" TO BE POSITIVE WITH RESPECT TO PIN "A" ON APPROACH OF FERROUS MATERIAL.

3.2.2.5 INSULATION RESISTANCE: 100 MEG MINIMUM AT 500 VDC BETWEEN COIL AND SHELL.

3.3 ENVIRONMENTAL:

3.3.1 OPERATING TEMPERATURE: -55°C TO +107°C

3.4 MATERIALS:

3.4.1 HOUSING: 300 SERIES SST

3.4.2 POLE PIECE: 400 SERIES SST

3.4.3 INTERNAL: UNITS ARE EPOXY ENCAPSULATED WITH MATERIALS APPROPRIATE FOR THE UNIT'S RATED TEMPERATURE.

3.5 IDENTIFICATION OF PRODUCT: THE SENSOR SHALL BE PERMANENTLY MARKED WITH THE FOLLOWING INFORMATION IN .063 MIN HEIGHT CHARACTERS:

DATE CODE 676-0122-001

AI-TEK /70085-1010-523 XXX

4.0 QUALITY ASSURANCE PROVISIONS:

4.1 QUALITY CONFORMANCE INSPECTION: IN ACCORDANCE WITH ATP 900-0110-001

5.0 PREPARATION FOR DELIVERY: UNLESS OTHERWISE SPECIFIED IN THE CONTRACT OR PURCHASE ORDER, ALL ITEMS SUPPLIED IN ACCORDANCE WITH THIS SPECIFICATION SHALL BE PACKAGED & PACKED IN A MANNER TO ASSURE ACCEPTANCE BY COMMON CARRIER & SAFE DELIVERY AT DESTINATION.

6.0 NOTES:

6.1 SENSOR MUST BE RoHS COMPLIANT.

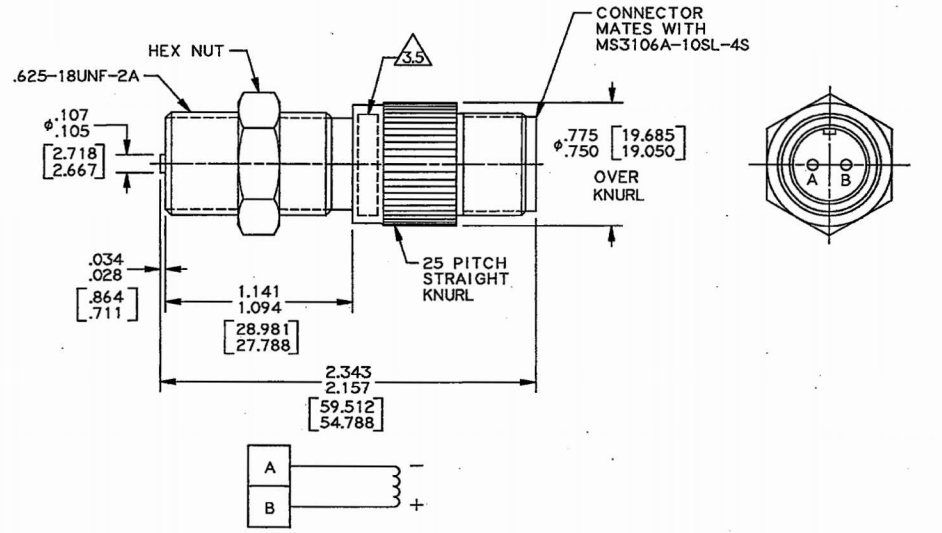

FIGURE 1
WIRING SCHEMATIC

PRODUCT SPECIFICATION

VERIFY REVISION BEFORE USING

CCB APPROVAL REQUIRED FOR CHANGE

FINAL	FINAL	MATERIAL: ———	AI-TEK Instruments, LLC Cheshire, CT USA 06410						
NEXT ASSY	USED ON	FINISH: ———							
ORIGINAL APPLICATION		TOLERANCES UNLESS OTHERWISE SPECIFIED X.X DIM ± — X.XXX DIM ± — X.XX DIM ± — ANGLES ± — DIMENSIONS = IN.[MM]	TITLE SENSOR, SPEED						
INTERPRET DRAWING PER ANSI Y14.5M 1982 UNLESS OTHERWISE SPECIFIED ALL DIM RFS									
DO NOT SCALE DWG		APPROVALS		DATE	APPROVALS		DATE	SIZE C	CAGE CODE 1XP56	DWG NO 70085-1010-523
		DWN BY KAE		7/22/09	DSGN ENGRG ER		7/22/09			
		CHK BY ER		7/22/09	MFG ENGRG CSK		7/23/09			
THIRD ANGLE PROJECTION					QUAL ENGR CEG		7/23/09	SCALE —		SHEET 1 OF 1

70085-1010-523 A B