

Quality Assurance Plan													
Sr. No.	COMPONENTS & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENTS/SPECIFICATION	ACCEPTANCE NORMS	FORMAT OF RECORD	INSPECTION AGENCY			Remarks
					Vendor	TPIA/Client				P	W	R	
1.0	RAW MATERIAL INSPECTION												
1.1	Terminal Head	Protection Class & Visual/Aesthetic look	Major	Review	Sample/Lot		Approved Drawing And Data sheet	Approved Drawing And Data sheet	IP Certificate	1	-	2	As applicable
1.2	Raw Material certificate for Element, Sheath, Thermowell and Flange.	Mechanical & chemical analysis	Major	Review	Sample/Lot		Approved Drawing And Data sheet	Approved Drawing And Data sheet	M.T.C/LAB Reports	1	-	2	MTC EN 10204 3.1 Type
3.0	ROUTINE TEST FOR THERMOCOUPLE (Applicable Items: Sr 1-7, 11, 12, 32-37)												
3.1	Routine Test	Visual and Dimension	Major	Visual /Measurement	100%	-	Approved Drawing And Data sheet	Approved Drawing And Data sheet	Internal Test Report	1	-	2	Sheath OD, Length, Tip Welding
3.2		Calibration Test (Accuracy Test)	Major	Electrical	100%	-	Approved Drawing And Data sheet	Class 1 IEC 60584-2	Internal Test Report	1	-	2	For K-Type with Cable at 0°C, 100°C, 200°C. For K-Type at 0°C, 300°C, 600°C. For R-Type at 600°C, 800°C, 1400°C
3.3		PMI for Sheath	Major	Electrical	100%	-	Approved Drawing And Data sheet	Approved Drawing And Data sheet	Internal Test Report	1	-	2	SS316/SS321/Inconel
3.4		IR Test Ambient Temp. (as applicable)	Major	Electrical	100%	-	IEC 61515	≥100 MΩ @ 500 VDC	Internal Test Report	1	-	2	
3.5		Polarity Check (As Applicable)	Major	Electrical	100%	-	IEC 61515	IEC 61515	Internal Test Report	1	-	2	
3.6		Response Time Test	Major	Thermal Response	1 Sample	-	IEC 61515	<10 Sec at T ₅₀ Step change	Internal Test Report	1	-	2	
4.0	ROUTINE TEST FOR RTD (Applicable Items: Sr 8, 13-18, 28-31)												
4.1	Routine Test	Visual and Dimension	Major	Visual /Measurement	100%	-	Approved Drawing And Data sheet	Approved Drawing And Data sheet	Internal Test Report	1	-	2	Sheath OD, Length, Tip Welding
4.2		Calibration Test (Accuracy Test)	Major	Electrical	100%	-	IEC 60751	Class A/B IEC 60751	Internal Test Report	1	-	2	Calibration at 0°C, 100°C, 200°C
4.3		PMI for Sheath	Major	Electrical	100%	-	Approved Drawing And Data sheet	Approved Drawing And Data sheet	Internal Test Report	1	-	2	SS316
4.4		Continuity Check	Major	Electrical	100%	-	IEC 60751	IEC 60751	Internal Test Report	1	-	2	
		Response Time Test	Major	Thermal Response	1 Sample	-	IEC 60751	<10 Sec at T _{63.2} Step change	Internal Test Report	1	-	2	IEC 60751:2022 Clause 6.5.5
		HV Test (As Applicable)	Major	Electrical	100%	-	IEC 60751	1.5 KV withstand	Internal Test Report	1	-	2	For Line item 17 Only (Item Code 194300160053)
4.5	IR Test Ambient Temp. (as applicable)	Major	Electrical	100%	-	IEC 60751	≥100 MΩ @ 100 VDC	Internal Test Report	1	-	2		
5.0	ROUTINE TEST FOR THERMOWELL AND FLANGE (Applicable Items: Sr 7, 9, 10, 12, 29, 30, 33-37)												
5.1	Routine Test	Visual and Dimensions	Major	Measurement	100%	-	Approved Drawing And Data sheet	Approved Drawing And Data sheet	Internal Test Report	1	-	2	OD, ID, Length (ANSI B16.5 for flange)
5.2		PMI Check	Major	Material Grade Verification	100%	-	Approved Drawing And Data sheet	Approved Drawing And Data sheet	Internal Test Report	1	-	2	SS316 / Inconel
5.3		Hydro Test for Thermowell (Internal) - As Applicable	Major	Leak Test	100%	-	Approved Drawing And Data sheet	1.5 times operating pressure	Internal Test Report	1	-	2	
5.4	NDT Test	Bore Concentricity (As Applicable)	Major	Wall thickness measurement	100%	-	Approved Drawing And Data sheet	Bore to be concentric with OD within 10% of the wall thickness	Internal Test Report	1	-	2	
5.5		Dye Penetrant Test (DPT)	Major	Weld Defect Identification	100%	-	AS per ASTM E-165/ASTM SEC V	AS per ASME SEC VIII D1/ASME SEC-IX	Internal Test Report	1	-	2	(As Applicable)

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					Vendor	TPIA/Client				P	W	R		
6.0	Identification and Marking													
6.1	Identification and Marking	Identification Marking of tagging for each Instruments	Major	Visual	100%	-	Approved Drawing And Data sheet	Approved Drawing And Data sheet	Approved Drawing And Data sheet	1	-	2		
7.0	Document Requirement													
7.1	Document	Verification/Review of Statutory Certificates and ensuring valid certificates availability	Major	Major	100%	-	Compliance To Approved Data sheet/Drawing , PO & Project Specification	Compliance To Approved Data sheet/Drawing , PO & Project Specification	a) Type Test b) MTC c) Internal Test Reports	1	-	2		
8.0	Preservation & Packing													
8.1	Preservation & Packing	Preservation & Packing	Major	-	100%	-	Approved Datasheet/Drawing/ Tech. spec.	Approved Datasheet/Drawing/ Tech. spec.	Packing List	1	-	-		
Legend : P : Perform W : Witness R : Test report Review H: Hold Inspection agency : (1) Manufacturer (2) TPIA/Client MTC: Manufacturer Test Certificate, CATC: Certifying Agency Test Certificate.							Prepared By		Checked by		Approved By			Approved By