


Plant CAUSTIC SODA	Client Punjab Alkali	Contract Code PACL	Document ID 0215-INS-00-EC-0024	Contract No. 66- 0215-700
	TECHNICAL SPECIFICATIONS – pH/REDOX AND CONDUCTIVITY ANALYZERS			pacl
				Rev

<p>tkIS India / Vendor</p> <p>Category Codes (Submission Purpose)</p> <p><input type="checkbox"/> 1 For Approval</p> <p><input type="checkbox"/> 2 For Review / Comments</p> <p><input type="checkbox"/> 3 For Information</p> <p><input type="checkbox"/> 4 For Engineering</p> <p><input type="checkbox"/> 5 For Enquiry</p> <p><input type="checkbox"/> 6 For Order Placement</p> <p><input type="checkbox"/> 7 Final & Approved</p> <p><input type="checkbox"/> 8 Released for Construction</p> <hr/> <p>Acceptance Codes (Approval Codes)</p> <p><input type="checkbox"/> 1 Approved</p> <p><input type="checkbox"/> 2 Approved for Manufacturing / Fabrication with Comments as marked</p> <p><input type="checkbox"/> 3 Not Approved / Resubmit</p> <p><input type="checkbox"/> 4 Retained for Information / Records</p> <p><input type="checkbox"/> 5 Reviewed</p> <p><input type="checkbox"/> 6 Reviewed as Noted / Resubmit</p> <p>Remarks for AC2 : This marked-up drawings is hereby approved for fabrication / manufacturing and shall be re-submitted after revision. This drawing should be revised only to the extent of tkIS India / Owner / Client comments. Any other changes made by you will not be considered unless clearly highlighted in covering letter asking for approval.</p> <p>This approval / review does not absolve the supplier from the full responsibility for design and fabrication.</p> <p>Date : ___/___/___ Name : _____</p>	<p>tkIS India / Owner / Client</p> <p>Category Codes (Submission Purpose)</p> <p><input type="checkbox"/> 1 For Approval</p> <p><input type="checkbox"/> 2 For Review / Comments</p> <p><input type="checkbox"/> 3 For Information</p> <p><input type="checkbox"/> 4 For Engineering</p> <p><input checked="" type="checkbox"/> 5 For Enquiry</p> <p><input type="checkbox"/> 6 For Order Placement</p> <p><input type="checkbox"/> 7 Final & Approved</p> <p><input type="checkbox"/> 8 Released for Construction</p> <hr/> <p>Acceptance Codes (Approval Codes)</p> <p><input type="checkbox"/> 1 Approved</p> <p><input type="checkbox"/> 2 Approved for Manufacturing / Fabrication with Comments as marked</p> <p><input type="checkbox"/> 3 Not Approved / Resubmit</p> <p><input type="checkbox"/> 4 Retained for Information / Records</p> <p><input type="checkbox"/> 5 Reviewed</p> <p><input type="checkbox"/> 6 Reviewed as Noted / Resubmit</p> <p>Date : ___/___/___ Name : _____</p>
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B 66-0215-10729084 EC 000 01 IA 19.03.2019



Rev.	Status	Description	Date	Prepared	Date	Checked	Date	Approved	AC
1	IFE	For Enquiry(For Additional Tags)	19/03/2019	<i>Kranji</i>	19/03/2019	<i>AB</i>	19/03/2019	<i>AB</i>	ADE
0	IFE	For Enquiry	02/01/2019	KDB	02/01/2019	ADE	02/01/2019	PRK	PRK

Based on : PIN-LES-INS-061 08-2017

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Barcode

Category Code: -

Plant CAUSTIC SODA	Client Punjab Alkali	Contract Code PACL	Document ID 0215-INS-00-EC-0024	Contract No. 66- 0215-700	
	TECHNICAL SPECIFICATIONS – pH/REDOX AND CONDUCTIVITY ANALYZERS				
				Rev	01

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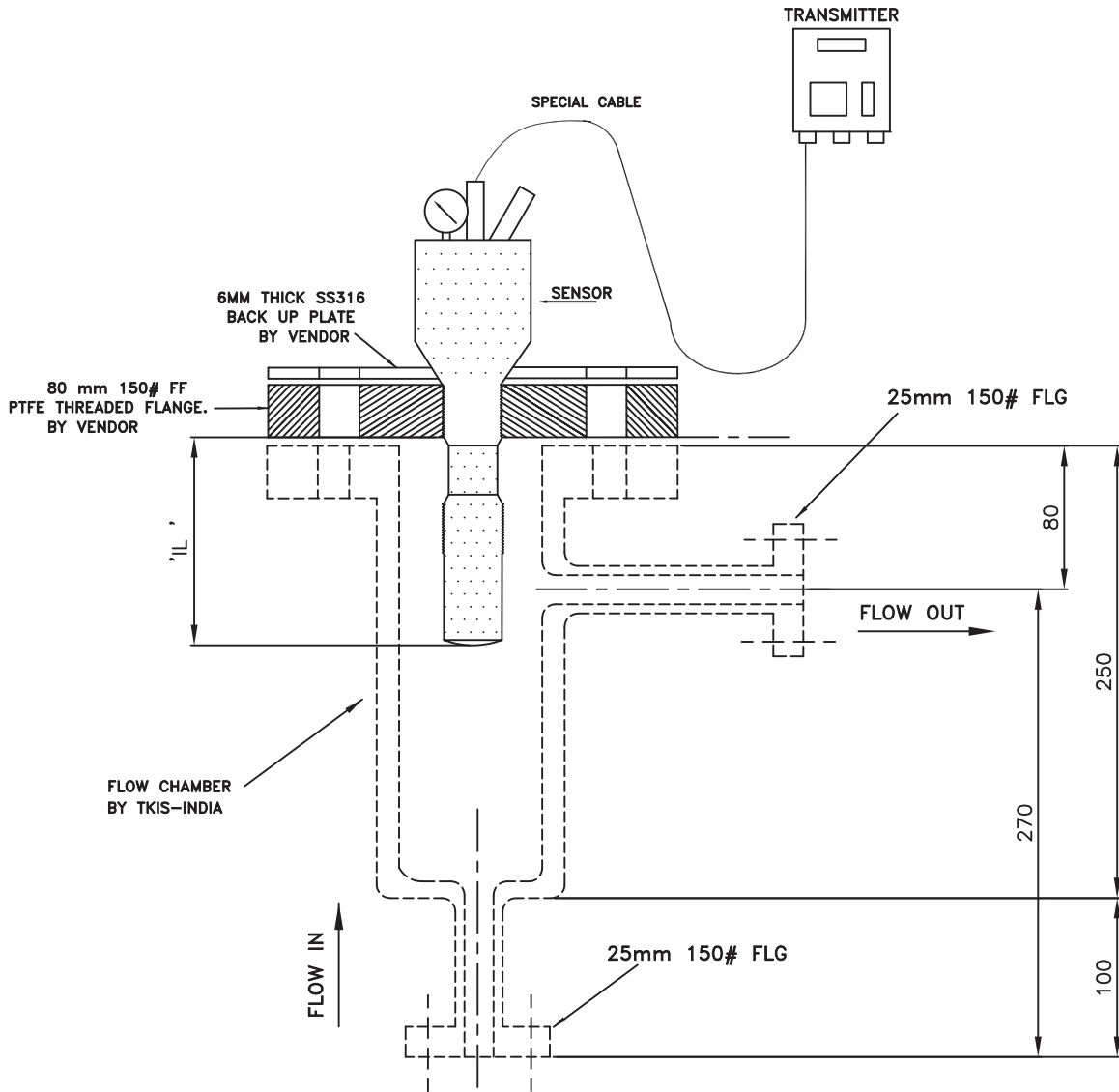
NO.	DESCRIPTION	PAGE NOS.
1.	Standard general specification – pH/Redox and conductivity analysers	2 ~ 3
2.	Project specific requirements	4
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5.	Compliance Declaration & PTR	9 ~ 11
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7.	Tag List – pH/Redox and conductivity analysers	11
8.	Data Sheets – pH/Redox and conductivity analysers	S1 ~ S7

DOCUMENTS ATTACHED:

NO.	DESCRIPTION	NO. OF PAGES	DOCUMENT NO.	LATEST REV.
1.				
2.				

SKETCH-2
PLASTIC CHAMBER
FOR pH PROBE


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NOTES:

- 1) VENDOR TO ENSURE THAT TIP OF ANALYSER PROBE ALWAYS REMAINS IN CONTACT WITH PROCESS FLUID.
- 2) TAG LIST
AT-0502N, AT-0503N, AT-0504N, AT-0601AN, AT-0601BN, AT-0601CN, AT-2601N

Requisition number:		P. O. number:		
Rev. No.	Item Number	Tag Number	Instrument Type	Page No.
1	1	AT -0502N	ph measurement transmitter	S-1
1	2	AT -0503N	ph measurement transmitter	S-2
1	3	AT -0504N	Redox measurement transmitter	S-3
1	4	AT -0601AN	ph measurement transmitter	S-4
1	5	AT -0601BN	ph measurement transmitter	S-5
1	6	AT -0601CN	ph measurement transmitter	S-6
1	7	AT -2601N - Added	Redox measurement transmitter	S-7

Domain: PACL_350TPD				Plant: PACL_EXPANSION	
Area: 350 TPD NaOH Plant				Unit: 26-Waste Gas Dechlorination _Sodium Hypo Unit	
				Binder Package	
				Formal issue Date: 19-03-2019	
				Instrument Specification List pH/Redox Transmitter	
					
				Page I-1 of 1	
1	KDB	19-03-2019	Issued for Enquiry(For Additional Tags)		
0	KDB	02-01-2019	Issued For Enquiry		
No.	By	Date	Description	Doc. No.: 0215-INS-00-EC-0024	
				Rev.: 1	

Installation area data										
B51	Installation location	Outdoor installation			B67	Remote hazardous area class	Non hazardous area			
B52	Corrosive influence by (1)				B68	Remote area min. ign. temp.				
B53	Ambient temp. [min.][max.]	2	48	°C	B69	Max allow. sound press. level	85	dB(A)		
B54	Ambient work. temp. [min.][max.]	2	48	°C	B20	Remark (1)				
B55	Max. relative humidity	100		%	B21	Remark (2)				
B57	Altitude above sea level	348		m						
Component process design					Component process design (continued)					
N01	Manufacturer	*			Q04	Service	HYPO REDOX TO TWR SUMP A			
N02	Manufacturer model no.	*			N11	SIL class				
Q22	Type of construction	Flow through chamber (Sketch-2)			N10	Cleaning requirement				
Q01	Meas. principle \ Detector type	Potentiometric			F01					
Q02	Measured variable	Redox			F02					
Q21	Indicator	Digital LCD in engg units			N12	Remark (1)				
					N13	Remark (2)				
Mechanical design					Performance data					
N14	Enclosure protection class	IP 65			Q07	Availability	>95%			
N15	Case [type][size]	2" Pipe Mounted			Q08	Response time T90				
N16	Material case	Polycarbonate			T68	Repeatability				
Q06	Material with sample contact	PTFE			Q09	Zero \ span stability				
					Q10	Accuracy	+/- 1.0 mV			
					Q14	Measuring cell thermostat				
F01					F01					
F02					F02					
N25	Remark (1)				Q15	Remark (1)				
N26	Remark (2)				Q16	Remark (2)				
Electrical design					Electrical design (continue)					
N96	ATEX code	*			F01					
Q94	EMC-standard				N32	Remark (1)				
Q17	Power supply\consumpt.\feedeNo				N33	Remark (2)				
Additional accessories / Material part no.					Additional accessories / Material part no.(continue)					
N34	Mounting set incl.in delivery	2" Pipe Mounted			N60					
N35	Mounting set material/coating	SS304			N61					
Q23	Analyser panel assy: type				N62					
Q24	Analyser panel assy: size				N63					
Q25	Analyser panel assy: features				N64					
Q26	Test gases w. regulators				N37	Remark (1)	Accessories : Calibration Kit			
Q27	Sample handling equipment				N38	Remark (2)				
Q28	Test and alignment tools									
Description, Notes, Information										
Q60	Add. information (1)									
Q61	Add. information (2)									
Q63	Add. information (3)									
Q64	Description, notes (1)									
Q65	Description, notes (2)									
Q66	Description, notes (3)									
Q67	Description, notes (4)									
List of sample streams (refer to relevant datasheet)										
Stream No.	Loop-Tag-Nr.	Description					Remark			
1										
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Tag Identific. AT -2601N Part no. QAWD002 Inst Type: Redox measurement transmitter										
		1	19-03-2019	Instrument Data Sheet			UAN / Code PACL_350TPD 660215 Plant PACL_EXPANSION			
		R	Date	Client Doc ID:						
		Doc. ID-Code: AT -2601N-SP			CC:	UA:	Form No: 56		Page S-7.1 / 28	

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Fitting				Sensor			
Q93	Manufacturer			Q80	Manufacturer		
Q96	Manufacturer model no.			Q81	Manufacturer model no.		
Q95	Type of construction	Flow through chamber (Sketch-2)		Q82	Type of construction	Combined glass electrode	
Q68	Material fitting	PTFE		Q83	Max temperature		
Process connection				Q84	Max pressure		
Q70	Connection in [style][size]	Flanged	25 mm	Q85	Cell constant \ ref.temp		
Q71	Connection out [style][size]	Flanged	25 mm	Q86	Material sensor	PTFE	
Q72	Pressure rating	Class 150#		Q87	Electrical conn./cable	Special cable Sensor to Trans 5 m	
Q73	Flange facing	FF		Q88	Dimension		
Q74	Face to face dimension			Q89	Temperature sensor \ type	Pt100 integrated with pH sensor	
Q75	Max. temperature			Q90	Reference electrode \ type	Porous PTFE	
Q76	Max. pressure			Q91	Electrolyte bridge	Yes with KCl	
Q77	Length of immersion / dimension	150 mm		Q92	Pressurized		
Q29	Sample flow						
Q78	Fixing						
Q79	Electrode cleaning						
Q52	Remark (1)	Sensor connection 80mm 150# Flange		Q54	Remark (1)	Temperature compensation required	
Q53	Remark (2)			Q59	Remark (2)		

Signal specification

E43	Signal identification						
E03	Realisation	DCS		E13	Design class		
E01	SIL (IEC 61508)			E02	Signal rate	4..20 mA HART	
E10	Type of signal	AI		E09	Type of expl. protection		
Y54	Signal characteristic	Syst.powered		Q93	Electric isolation		
Y78	Apparent ohmic resistance			E08	Remark		

Notes

30 Redox transmitter is remote mounted.

31 Cable entry 1/2" NPT(F) for sensor and transmitter.


32 2 nos. SS316 double compression cable glands required.

33 Redox Analyser probe shall be suitable for Sodium Hypo Chlorite service and shall withstand upto 50 deg.C and 8 Kg/cm2g.


34 Flow through chamber is supplied by others.

35 80mm 150# PTFE Flange for mounting pH electrode shall be in vendors scope.

36 DOCTC for test certificate

	1	19-03-2019	Instrument Data Sheet		UAN / Code PACL_350TPD 660215	
	R	Date			Client Doc ID:	
Doc. ID-Code: AT -2601N-SP			CC:	UA:	Form No: 56	Page S-7.2 / 28


Installation area data										
B51	Installation location	Outdoor installation			B67	Remote hazardous area class	Non hazardous area			
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B53	Ambient temp. [min.][max.]	2	48	°C	B69	Max allow. sound press. level	85	dB(A)		
B54	Ambient work. temp. [min.][max.]	2	48	°C	B20	Remark (1)				
B55	Max. relative humidity	100 %			B21	Remark (2)				
B57	Altitude above sea level	348 m								
Location data (sampling point)										
B25	Fluid	Sodium Hypo Chlorite			B04	PI-Diagram / Sheet no.	26-01N			
B41	Composition				B80	Reference location	50-SHC-26014N-PR55C			
B42	Corrosive components				B84	Pipe spec. selected	PR55C			
B43	Toxic components				B92	Line material	FRP, DERAKANE 411-350			
B44	Abrasive components				B14	Line [DN][PN]	50 mm			
B45	Suspended particles				B64	Line diam.[inside][outside]	50			
B39	Special fluid properties (1)				B10	Nozzle [no.][length]				
B40	Special fluid properties (2)				B88	Nozzle[lining][inside diam.]				
B46	Water hazard class (WHC)				B61	Nozzle [DN][PN]				
B47	Idicat. of danger (64/548/EEC)				B87	Nozzle distance				
B50	Pollution restriction				B97	Connection type				
B48	Inline hazardous area				B93	Connection facing				
B26	Phase				B15	Insulation [type][thickness]				
Process data (return point)										
D03	Process variable	Redox			B70	Design pressure [min.][max.]				
		Runcase value	min.	norm.	max.	unit	B72	Design temp. [min.][max.]	8	kgf/cm ² -g
D80	Measuring range	-400			1000	mV	B98	Remark (1)		
D04	Process variable rate	-200	300	800	mV	B99	Remark (2)			
D24	Operating pressure p1		0.5		kgf/cm ² -g	Sample line I (sampling point)				
D30	Operating temperature t1		15		°C	B11	Pipe diameter			
D33	Operating density			1200	kg/m ³	B12	Line conn. in[style][size]			
D73	pH-value				B13	Line conn. out [style][size]				
D65	Dewpoint				B17	Length of line				
D64	Thermal conductivity				B18	Heating \ required temperature				
D10	Density at ref. cond.				B19	Power supply\consumpt.\feederNo				
D11	Dyn. viscosity									
D53	Molecular weight									
D54	Compressibility factor (Z1/Zn)									
D55	Rel. dielectr. const. Epsilon r									
D56	Electrical conductivity			20	µS/cm	Location data II (Return point)				
D66	Iseotropic exponent				B04	PI-Diagram / Sheet no.				
D43	Max. allowable pressure drop				B80	Reference location				
D70	Max loop lag time				B84	Pipe spec. selected				
Sample line I (sampling point)										
F01					B92	Line material				
F02					B14	Line [DN][PN]				
F03					B64	Line diam.[inside][outside]				
F04					B10	Nozzle [no.][length]				
F05					B88	Nozzle[lining][inside diam.]				
F06					B97	Connection type				
F07					B93	Connection facing				
Sample line II (return point)										
Process data (return point)										
		Runcase value	min.	norm.	max.	unit	B11	Pipe diameter		
D24	Operating pressure p1						B12	Line conn. in[style][size]		
D30	Operating temperature t1						B13	Line conn. out [style][size]		
Sample line II (return point)										
Process data (return point)										
		Runcase value	min.	norm.	max.	unit	B17	Length of line		
D24	Operating pressure p1						B18	Heating \ required temperature		
D30	Operating temperature t1						B19	Power supply\consumpt.\feeder		

	1	19-03-2019	Instrument Data Sheet			UAN / Code	PACL_350TPD	660215
	R	Date	Client Doc ID:			Plant	PACL_EXPANSION	
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Composition											
Cod.	Component	Min.	Norm.	Max.	Unit	Meas. range[lower][upper]	L	LL	H	HH	Remark
1	Na2CO3		2	10	gpl	—					
2	Active Chlorine		20	120	gpl	—					
3	NaClO3		1		gpl	—					
4	CL2		0	120	mgpl	—					
5	NaOH		20	200	gpl	—					
6	H2O(Balance)					—					
7						—					
8						—					
9						—					
10						—					
11						—					
12						—					
13						—					
14						—					
15						—					

19 Redox transmitter is remote mounted.
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