

ULTRASONIC FLOWMETER										Rev.
S.No.									Rev.	
General	1	Tag No.				As per P&ID				
	2	Quantity				Refer MR and P&ID				
	3	Line No./ Equipment No				Refer P&ID				
	4	Line Size & Schedule				Refer PMS				
	5	Service				Natural Gas				
	6	Type				Multipath (Minimum 2 path)				
Flow Meter	7	End connection		Size and Rating		Flanged MOC should be min SS316			As per P&ID	
	8	Facing & Finish				RF				
	9	Pulses / M3				*				
	10	Flow Range (MMSCMD)(max.)				Vendor to specify				
	11	Enclosure				Flameproof cum Weather proof IP67 as per IEC 60529 / IS 2147 & IS 2148				
	12	Material		Body		*MOC should be min SS316L				
	13	Bi-directional /Unidirectional				Uni-directional				
	14	Radiography/Charpy test				Required				
	15	Overall uncertainty (including lab)				±0.3% OF READING(for Qt<Qi<Qmax)				
	16	Accuracy				±1 %				
	17	Repeatability				±0.1% for qt<qi<qmax & ±0.2% for qmin<qi<qt				
	Pre - amplifier	18	Transducer type				Piezo-electric			
19		Transducer				ASTM A182F316				
20		Type - 2 wire/ 3 wire				*				
21		Preamplifier location				Meter Mounted				
22		Power supply				From transmitter				
23		Cable Entry				1/2" NPT(F)				
Transmitter	24	Enclosure				Weather proof IP65 as per IEC 60529 / IS 2147				
	25	Intrinsic safe				Certification Exia IIB T4 as per CENELEC				
	26	Power Supply		Cable Entry		24 VDC		M20 Cable gland connection		
	27	Output				4-20 mA & RS422/485				
	28	Enclosure				Weather proof IP67 as per IEC 60529 / IS 2147				
	29	Intrinsic safe				Certification Exia IIB T4 (min) as per CENELEC/UL/BASIEFA/FM/PTB				
Service Conditions	30	Mounting				Meter Mounted				
	31	Transmitter Type				Electronics				
	32	Flow Conditioner/ Profiler				Required (material should be min SS316)				
	33	Retractable Probes				Required				
	34	Pressure Tap on Meter Body				Required - 1/2" NPT(F)				
	35	Cold Insulation								
	36	On Meter (Jacket type)								
	37	On Meter tube (Up & down stream)				Required				
Service Conditions	38	Thermowell & Inpulse tubing				Required				
	39	Fluid and State				Natural Gas & Gas				
	40	Flow	Min.	Normal	Max.	Design	Refer Process Datasheet/PI&D			
	41	Temp.	Min.	Normal	Max.	Design				
	42	Pressure	Min.	Normal	Max.	Design				
	43	Molecular Wt.	Specific Gravity							
	44	Viscosity (cP)								
	45	Cp/ Cv ratio								
	46	Max.allowable pressure drop								
	47	Compressibility Factor								
48	Area Classification				Hazardous Zone 1 Group IIA /IIB as per IEC					
49	Model No.	Meter			*		*			
50	Transmitter				*					
Notes: Vendor to specify.*										
1	Vendor to provide meter sizing calculations based on process conditions for review.									
2	Maximum permitted velocity through USM is 30 m/sec.									
3	Vendor offer shall include mandatory spares and operating spares for 2 years.									
4	Vendor shall provide detailed GA drawing along with all parts name and MOC for the ultrasonic flow meter along with data sheet.									
5	Meter shall be USM Type. straight run before and after meter shall be as per AGA9 or as per meter OEM recommendation, Minimum indication, Available in the flow Computer display shall be PI, TI & FL.									
6	A qualified flow conditioner and upstream and down stream pipe runs shall be supplied by the meter manufacturer and shall be used.									
7	The supplied Ultrasonic Flow Meter shall be calibrated at reputed laboratory (e.g. NMI/PTB/NIST(USA)/TCC(Canada)/FCRI-pallakad, Gail Hazira/Gail(Dibiyapur U.P.) and calibration certification submitted.									
8	Flow transmitter housing material shall be SS-316.									
9	USM shall not be equal to or less than half of inlet pipe size.									
10	EVC to be provided with Facility communication through GSM/AMR.									
	CLIENT:		HOGPL (HPOIL GAS PRIVATE LIMITED)			C2	19.09.26	AK	SKM	SKM
	PROJECT:		CITY GAS DISTRIBUTION PROJECT AT GEOGRAPHICAL AREAS OF DIMAPUR NAGALAND			C1	15.09.26	AK	SKM	SKM
						REV.	DATE	PRPD	CHKD	APPR
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