



INSTRUMENTS SPECIFICATION SPECIFICA STRUMENTI

Specification N° : 1E35-80-032

Specifica N°

Customer - Cliente :

Sheet : 1 of 8

Plant - Impianto : SULPHUREX

Foglio

Job - Commessa : 1E35

Rev. : 2

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MASS FLOW-METERS *Misuratori di Portata Massici* **Desmet Ballestra Supply**

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2	Revised where indicated	A. Emonte	21/01/2010
1	Issue for order sh. 6-7-8 (n°291363) / sh. 3-4-5 (n°291507)	A. Emonte	21/12/2009
0	Issue for bid sh. 3-4-5	A. Emonte	06/11/2009
REV	Issue Description	Author	Date
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INSTRUMENT SPECIFICATION SPECIFICA STRUMENTI

Specification N° : **1E35-80-032**

Specifica N°

Customer - Cliente :

Sheet : **2** ofPlant - Impianto : **SULPHUREX**

Foglio

Job - Commessa : **1E35**Rev. : **0**

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NOTE GENERALI E INFORMAZIONI / GENERAL REQUIREMENTS AND INFORMATION

1. CONDIZIONI AMBIENTALI / ENVIROMENTAL CONDITIONS

Massima temperatura aria ambiente	/	Maximum ambient air temperature	:	+40° C
Minima temperatura aria ambiente	/	Minimum ambient air temperature	:	+25° C
Temperatura a bulbo umido	/	Design Wet bulb temperature	:	+30° C
Altitudine	/	Altitude not exceeding	:	0-10 meter ASL
Massima umidità relativa	/	Maximum Relative Humidity	:	85 %

2. TROPICALIZZAZIONE / TROPICALIZATION

Per tutti gli strumenti è richiesta la tropicalizzazione
Is required tropicalization for all instruments

3. NORME E SPECIFICHE DI RIFERIMENTO / REFERENCE RULES AND SPECIFICATIONS

- Gli strumenti descritti in questa specifica dovranno essere in accordo alle seguenti normative e/o raccomandazioni:
The instrumentation shall be carried out according to the following rules and/or recommendations:

CEI / IEC

ANSI

API

- I seguenti documenti sono parte integrante di questa specifica

The following documents are part of this specification :

**1E35-81-191 - Material requisition for Instruments, control and on-off valves,
pressure safety devices**

4. TARGHETTE / NAMEPLATES

Tutti gli strumenti dovranno avere una targhetta in Acciaio Inossidabile con inciso l'ITEM dello strumento.
All instruments shall be furnished with Stainless Steel nameplate with instrument TAG

5. ACCESSORI / ACCESSORIES

- Sul corpo delle valvole dovrà essere incisa la freccia con l'indicazione della direzione del flusso.

Valve body shall have an integral arrow indication direction of flow.

- Sulla Valvola dovrà essere indicata la posizione di "Aperta" e "Chiusa"

On the Valve shall be indicated the position "Open" and "Close".

6. ATTUATORI / ACTUATORS

- Sul corpo delle valvole dovrà essere incisa la freccia con l'indicazione della direzione del flusso.

Valve body shall have an integral arrow indication direction of flow.

- Sulla Valvola dovrà essere indicata la posizione di "Aperta" e "Chiusa"

On the Valve shall be indicated the position "Open" and "Close"

- Il Venditore dovrà fornire le valvole complete di Volantino manuale per le operazioni locali in campo. Dovrà essere previsto un dispositivo meccanico per escludere il cilindro quando si deve intervenire con il Volantino manuale

Vendor shall provide Handweel for local field operation. A means for cylinder exclusion operation when using Handweel shall be provided

7. POSIZIONATORI / POSITIONERS

Tutte le valvole dovranno essere equipaggiate con Posizionatori Elettropneumatici

All valves shall be equipped with Electro/pneumatic positioners.

8. MATERIALI / MATERIALS

- Connessioni pneumatiche e raccorderia dovranno essere in Acciaio Inox (il Rame NON è accettato)

Pneumatic connection and fittings in Stainless Steel (Copper materials shall NOT be admitted)

9. ALIMENTAZIONE ARIA STRUMENTI / INSTRUMENTS AIR SUPPLY

L'aria strumenti è disoleata ma non filtrata - *Instruments air is Oil free but not filtered*

Pressione Minima - *Minimun pressure* : 4 barg

Pressione Normale - *Normal pressure* : 5 barg

Pressione Massima - *Maximum pressure* : 7 barg

Temperatura - *Temperature* : 30°C

10. LIVELLO SONORO / SOUND PRESSURE LEVEL

Il dimensionamento delle Valvole dovrà assicurare che il livello sonoro dovrà essere inferiore a 85 dBA a 1 metro di distanza
Valves sizing shall ensure that the sound pressure level will be less than 85 dBA at 1 meter.

11. INSTALLAZIONE E MONTAGGIO / INSTALLATION AND MOUNTING

Le valvole saranno montate con l'albero in posizione verticale.

The valves will be mounted with shafts in vertical position.

12. ELETTRONICHE / ELECTRONIC UNIT

Tutti gli strumenti dovranno essere di tipo SMART con protocollo HART

All instruments shall be SMART type with HART protocol

ALL ITEMS COMPLY WITH THE GENERAL REQUIREMENTS SHOWN ON THE GENERAL REQUIREMENTS SECTION OF THIS SPECIFICATION



INSTRUMENT SPECIFICATION

(1E35.80.032)

DWG. 1A12.80.002

CUSTOMER:

SH.

4

PLANT: SULPHUREX

OF

JOB: 1A12

Computer code.

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MASS FLOW & DENSITY MEASUREMENT

1	TAG :		FE - FIT - 16.4 // DT-16.1				
2	SERVICE :		SULPHONIC ACID PRODUCTION				
3	PIPING	IDENT.N°	DN	MATERIAL	DS - 16017	2"	(AISI 3404)
4	FLUID		STATE		SULPHONIC ACID	LIQUID	
5	SOLID CONTENT		CORROSIVE				
6	OPERATING CONDITIONS				NORMAL	MINIMUM	MAX
7	FLOW		Kg/h				
8	INLET PRESSURE		Bar				
9	INLET TEMPERATURE		°C				
10	SPEC. WEIGHT		Kg/dm3				
11	VISCOSITY		Cp				
12	MOLECULAR WEIGHT		Mw				
13							
14							
15	DELTA-P AVAILABLE		Bar				
16	MEASUREMENT TYPE REQUIRED						
17	SAMPLING SYSTEM				DIRECTLY ON LINE		
18	WETTED PARTS MATERIAL				HASTELLOY		
19							
20							
21	TRANSMITTER TYPE				ELECTRONIC	OUTPUT SIGNAL	
22	MOUNTING				LOCAL	FLOW	4- 20 mA
23	ELECTRICAL SUPPLY				110 V - 50 Hz	DENSITY	4- 20 mA
24	FLOW RANGE		Kg/h		0 - 6000	TEMPERATURE	
25	DENSITY RANGE		Kg/dm3		0,9 - 1,1		
26	TEMPERATURE RANGE		°C				
27							
28	INTERNAL PIPE DIAMETER				2 x 22 mm.	BURN - OUT	FULL SCALE
29	LOCAL INSTRUMENT REPEATER				YES- On trasmitter	ACCURACY %	
30	LOCAL RESET PUSH-BUTTON				YES- On trasmitter		
31							
32	PROCESS CONNECTION				2" 1/2	TROPICALIZATION	REQUIRED
33					ANSI 150 #1J		
34	ELECTRICAL CONNECTIONS				3/4" NPT F		
35	PROTECTION DEGREE				IP 65		
36	ACCESSOIRES						
37	1. SPECIAL CABLE FOR CONNECTION OF SENSOR TO TRANSMITTER : 20 mt.						
38							
39							
40							

Note :

4					PURCH. DATA		
3					Manufacturer	EMERSON	
2					Model	F100H999CQFNEZZZXHTMC +	
1						2700R12BCHEZZZ +	
0	ISSUE FOR ORDER	10.97	AVELLA			CNVDS222065	
REV.	DESCRIPTION	DATE	BY	APPR.	ORDER	291507	

INSTRUMENT SPECIFICATION

(1E35.80.032)
DWG. 1A12.80.002
SH. 5
OF
Computer code:

CUSTOMER:
PLANT: **SULPHUREX**
JOB: **1A12**

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MISURATORI DI MASSA E DENSITA' MASS FLOW & DENSITY MEASUREMENT

FE 16.4

SULPHONIC ACID			DDB	LAURYL	ETOX	
			MW 245	MW 207	MW 339	
FLOW	Kg/h		5092	2860	2921	
DENSITY	Kg/m3		1050	900	930	
VISCOSITY	Cp		400	50	200	
TEMPERATURE	°C		60	60	60	
PRESSURE	Bar		4÷10	4÷10	4÷10	
MOLECULAR WEIGHT						
CALCULAT. DELTA P.	Bar					
ACCURACY	%					
DELTA P. AVAILABLE	Bar	3				
CAPACITY RANGE	60 - 115 % NORMAL FLOW					

Note :

4				PURCH. DATA			
3				Manufacturer			
2				Model			
1				Supplier			
0	ISSUE FOR ORDER	10.97	AVELLA				
REV.	DESCRIPTION	DATE	BY	APPR.			

INSTRUMENT SPECIFICATION

(1E35.80.032)

DWG. 1A12.80.002

CUSTOMER:
PLANT: **SULPHUREX**
JOB: **1A12**

SH. **6**
OF
Computer code: r

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MASS FLOW & DENSITY MEASUREMENT

1	TAG :				FE - FIT - 16.3		
2	SERVICE :				RAW MATERIAL TO REACTOR		
3	PIPING	IDENT.N°	DN	MATERIAL	DD - 16009	2"	(AISI 3404)
4	FLUID		STATE		RAW MATERIAL	LIQUID	
5	SOLID CONTENT		CORROSIVE				
6	OPERATING CONDITIONS				NORMAL	MINIMUM	MAX
7	FLOW			Kg/h			
8	INLET PRESSURE			Bar			
9	INLET TEMPERATURE			°C			
10	SPEC. WEIGHT			Kg/dm3			
11	VISCOSITY			Cp			
12	MOLECULAR WEIGHT			Mw			
13							
14							
15	DELTA-P AVAILABLE			Bar			
16	MEASUREMENT TYPE REQUIRED						
17	SAMPLING SYSTEM				DIRECTLY ON LINE		
18	WETTED PARTS MATERIAL				AISI 316 L		
19							
20							
21	TRANSMITTER TYPE				ELECTRONIC	OUTPUT SIGNAL	
22	MOUNTING				LOCAL	FLOW	4- 20 mA
23	ELECTRICAL SUPPLY				110 V - 50 Hz	DENSITY	
24	FLOW RANGE			Kg/h	0 - 4500	TEMPERATURE	
25	DENSITY RANGE			Kg/dm3			
26	TEMPERATURE RANGE			°C			
27							
28	INTERNAL PIPE DIAMETER				2 x 13 mm.	BURN - OUT	FULL SCALE
29	LOCAL INSTRUMENT REPEATER				YES- On trasmitter	ACCURACY %	
30	LOCAL RESET PUSH-BUTTON				YES- On trasmitter		
31							
32	PROCESS CONNECTION				1"	TROPICALIZATION	REQUIRED
33					ANSI 150 RF		
34	ELECTRICAL CONNECTIONS				3/4" NPT F		
35	PROTECTION DEGREE				IP 65		
36	ACCESSOIRES						
37	1. SPECIAL CABLE FOR CONNECTION OF SENSOR TO TRANSMITTER : 20 mt.						
38							
39							
40							

Note :

4					PURCH. DATA		
3					Manufacturer	ROSEMOUNT	
2	Issue for job: 2C57 06/2004 GAV				Model	CHF-100M328 NQ	BN1-222
1	Order 241274					+ 17R11ABMT222	
0	ISSUE FOR ORDER				10.97	AVELLA	
REV.	DESCRIPTION				DATE	BY	APPR.

INSTRUMENT SPECIFICATION

(1E35.80.032)

DWG. 1A12.80.002

CUSTOMER:

SH.

PLANT: SULPHUREX

OF

JOB: 1A12

Computer code: n

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MISURATORI DI MASSA E DENSITA' MASS FLOW & DENSITY MEASUREMENT

FE 16.3

RAW MATERIAL			DDB	LAURYL	ETOX	
			MW 245	MW 207	MW 339	
FLOW	Kg/h		3817	2055	2360	
DENSITY	Kg/m3		860	820	900	
VISCOSITY	Cp		10	12	23	
TEMPERATURE	°C		50	50	50	
PRESSURE	Bar					
MOLECULAR WEIGHT						
CALCULAT. DELTA P.	Bar					
ACCURACY	%					
DELTA P. AVAILABLE	Bar	1,5				
CAPACITY RANGE	60 - 115 % NORMAL FLOW					

Note :

4					PURCH. DATA			
3					Manufacturer			
2					Model			
1					Supplier			
0	ISSUE FOR ORDER	10.97	AVELLA					
REV.	DESCRIPTION	DATE	BY	APPR.				



BALLESTRA S.p.A.
Milano - Italy

INSTRUMENT SPECIFICATION

CUSTOMER:

PLANT:

JOB:

SULPHUREX

2057

(1E35.80.032)
DWS. 1A12-80-002
SH. 8
REV.
Computer code:

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MASS FLOW & DENSITY MEASUREMENT

1	Tag	:	FE/ FIT 25.1						
2	Service	:	SULPHUR TO 12H1						
3	Piping	Identif. .N°	DN	Mater.	ZF.2500 (- 2")	211 - C.S.			
4	Fluid	:	State	SULPHUR		LIQUID			
5	Solid content	:	Corrosive						
6	Operating conditions	:	Normal	Minimum	Max				
7	Flow	:	Kg/h	500	100	250			
8	Inlet pressure	:	Bar	3					
9	Inlet temperature	:	°C	151					
10	Specification weight	:	Kg/dm3	1,78					
11	Viscosity	:	Cp	7					
12	Molecular weight	:	Mw						
13	Calculated deltaP	:	Bar	See calculation sheet					
14	Accuracy	:	%	See calculation sheet					
15	Delta p available	:	Bar	1					
16	Measurement type required	:	Mass Flow						
17	Sampling system	:	Directly on line						
18	Wetted parts material	:	HASTELLOY C						
19	Internal pipe diameter	:							
20	Accessories	:							
21	Transmitter type	:	Electronic						
22	Mounting	:	LOCAL						
23	Electrical supply	:	110 V - 50 Hz						
24	Flow range	:	Kg/h	0 - 720					
25	Density range	:	Kg/dm ³						
26	Temperature range	:	°C						
27	Local indicator on transmitter	:	YES						
28	Local reset push-button	:	YES						
29	Output signal	:							
30	Flow	:	4+20 mA						
31	Density	:							
32	Temperature	:							
33	Burn-out	:	Full scale						
34	Accuracy %	:	± 0,11						
35	Process connection	:	SIZE - TYPE	0,5"	SEE NOTE 3				
36	Electrical connection	:	3/4" - Sensor n°1-Transm. n° 3						
37	Electrical construction	:							
38	Protection degree	:	IP 65						
39	Manufacturer	:							
40	Model	:							
41	Order n°	:							

Note :

1. Flex cable in teflon for connection transmitter. Length : 10 mt
2. Instrument complete of jacketing with steam process connections 3/4" NPT-F (Mod.02-A1999)
3. Flanged ANSI-150 RF

PURCHASING DATA

Manufacturer : FISHER-ROSEMOUNT
Model : CMF025H520N RAMIZZINSJKTCMF25 +
CFEPA3ACSL
: RFF-9739 D4EMA
ORDER : 291363