

# INSTRUMENTS SPECIFICATION SPECIFICA STRUMENTI

Specification N°
Specifica N°

1E35-80-032

Customer - Cliente

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Sheet

1 of 8

Plant - *Impianto* Job - Commessa SULPHUREX 1E35 Foglio Rev.

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### **MASS FLOW-METERS**

## Misuratori di Portata Massici

### Desmet Ballestra Supply

#### **REVISIONS INDEX - INDICE DELLE REVISIONI**

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REV. 0	x	х	x	Х	х	х	Х	х																		
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REV. 5																										

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
Rev.	Descrizione	Autore	Data

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#### **INSTRUMENT SPECIFICATION** SPECIFICA STRUMENTI

Specification N°: Specifica N°

Sheet

Foglio

1E35-80-032

Customer - Cliente

**SULPHUREX** 

2 of

0

Plant - Impianto Job - Commessa

1E35

Rev.

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#### NOTE GENERALI E INFORMAZIONI / GENERAL REQUIREMENTS AND INFORMATION

#### CONDIZIONI AMBIENTALI / ENVIROMENTAL CONDITIONS

Massima temperatura aria ambiente Minima temperatura aria ambiente Temperatura a bulbo umido

Maximum ambient air temperature Minimum ambient air temperature Design Wet bulb temperature

+25° C +30° C 0-10 meter ASL

Altitudine

Altitude not exceeding Maximum Relative Humidity

+40° C

Massima umidità relativa

#### TROPICALIZZAZIONE / TROPICALIZATION

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

#### NORME E SPECIFICHE DI RIFERIMENTO I 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

#### TARGHETTE / NAMEDI ATES

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

#### ACCESSORI / ACCESSORIES

- Sul corpo delle valvole dovrà essere incisa la freccia con l'idicazione 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".

#### ATTUATORI / ACTUATORS

- Sul corpo delle valvole dovrà essere incisa la freccia con l'idicazione 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

#### POSIZIONATORI / POSITIONERS

Tutte le valvole dovranno essere equipaggiate con Posizionatori Elettropneumatici All valves shall be equipped with Electro/pneumatic positioners.

#### 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)

#### ALIMENTAZIONE ARIA STRUMENTI / INSTRUMENTS AIR SUPPLY

L'aria strumenti è disoleata ma non filtrata - Instrumets 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 30°C Temperatuta Temperature

#### 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.

#### 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.

#### **ELETTRONICHE / ELECTRONIC UNIT**

Tutti gli strumenti dovranno essere di tipo SMART con protocollo HART All instruments shall be SMART type with HART protocol



# INSTRUMENT SPECIFICATION SPECIFICA STRUMENTI

Customer - Cliente : SULPHURI

Job - Commessa

SULPHUREX 1E35

Rev.

1E35-80-032

Specification N°
Specifica N°

Sheet Foglio **3** of

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#### **MASS FLOW-METERS**

1	Tag :		-	E/FT/DT 33.1	1		 
	Service :		Di	scharge 33P6	/C		-
3	P & I number			1E35-10-010			
4	Piping Identif. N°	DN Material	NA-33014-2	215 1 ½"	AISI 304		
	Fluid	State	CAUSTI	C SODA	LIQ.		
6	Solid content	Corrosive			YES		
7	Operating condition	s	Minimum	Normal	Max		
8	Flow	Kg/h		1400/2700	3.000		
9	Inlet pressure	Bar g		3			
10	Inlet temperature	°C		40			
11	Specific weight	Kg/m³		900 / 1450			
12	Viscosity	Ср					
13	Molecular weight	Mw					
14							
15							-
16	Delta p available	Bar		1			
17	Measurement type r	equired	MAS	S FLOW & DEN	ISITY		
18	Mounting		DIF	RECLY ON L	INE		
19	Wetted parts materia			AISI 316L			
20	Internal pipe diamete	r		1/2"			 
21							
22							 
23	Transmitter type		ELECTR	ONIC (SMAF	RT Type)		 
24	Mounting			LOCALE			
25	Electrical supply			110V - 50Hz			
26	Flow range	Kg/h		0 - 4000			
27	Density range	Kg/m³		800 ÷ 1500		AAV MONT	
28	Temperature range	°C		-			
29	Local indicator on tra	nsmitter		YES			
30	Local reset push-butt	on		YES			
31	Output signal		\$				
32	Flow			4÷20 mA			 
33	Density			4÷20 mA			 
34	Temperature						AAAN AND AND AND AND AND AND AND AND AND
35	Burn-out		, .	FULL SCALE			 
36	Accuracy %			± 0,1	I		 
	Process connection	Size	Flanged Al	NSI 150#RF	1/2"		
38	Electrical connection		,	(2)			 
39	Electrical construction	n '		W.P.			
40	Protection degree	·		IP 65			 
41	Accessori		Extensio	n For High Tei	mperature		
42							 
43	PED certification			<u> </u>			 
44	NOTE			(1)			
45			1			1	

NOTES:

Special Cable in Teflon For Transmitter Connection ( L=10 mt )

2) N° 3 da ½" NPT-F on Trans. + N° 1 da ½" NPT-F on Sensor

PURCHASING DATA

Manufacturer : **EMERSON** 

Model: F050S113CHHNEZ1ZZHTMC+

2700C12BCMEZZZ + CFEPS1A035

Supplier : **EMERSON**Order : **291507** 

A) Calculation Sheet Required

B) Dimensional Drawing Sheet Required

# BALLESTRA S.p.A. MILANO (ITALIA)

#### INSTRUMENT SPECIFICATION

<u>(1</u>E35.80.032

DWG. 1A

D.

SH.

OF

LA12.80.002

CUSTOMER: PLANT:

JOB:

SULPHUREX 1A12

Computer code.

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#### MASS FLOW & DENSITY MEASUREMENT

1 1	TAG				FE-FIT-16.4 / DT-16,1								
	SERVICE				SULPHONIC AC	DID PRODUCTION							
	PIPING	IDENT.N°	DN M	IATERIAL	DS - 16017	2 ·	(AISI 3404)						
	FLUID		STATE		SULPHONIC ACID								
	SOLID CON	ITENT	CORROSI	VE									
		G CONDITION	1S		NORMAL	MINIMUM	MAX						
	FLOW			Kg/h									
	INLET PRE	SSURE		Bar									
		PERATURE		°C									
	SPEC. WEI			Kg/dm3									
	VISCOSITY			Ср									
		AR WEIGHT		Mw									
13			A CONTRACTOR OF THE PARTY OF TH										
14													
	DELTA-P A	VAILABLE		Bar									
16		MENT TYPE F	REQUIRED										
17	SAMPLING				DIRECTLY ON	LINE							
18		ARTS MATER	RIAL		HASTE	LioY							
19													
20													
21	TRANSMIT	TER TYPE			ELECTRONIC	OUTPUT SIGNAL							
22	MOUNTING				LOCAL	FLOW	4- 20 mA						
		AL SUPPLY			110 V - 50 Hz	DENSITY	4- 20 mA						
	FLOW RAI			Kg/h	0 - 6000	TEMPERATURE							
25	DENSITY I			Kg/dm3	0,9 - 1,1								
26		TURE RANGE		°C									
27	1 = 1111												
28	INTERNAL	PIPE DIAME	TER		2 x 22 mm.	BURN - OUT	FULL SCALE						
29		STRUMENT R	***************************************		YES- On trasmitter	ACCURACY %							
30		SET PUSH-B			YES- On trasmitter								
31	1200/12/12				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~								
32	PROCESS	CONNECTIO	N	$\rightarrow \wedge$	1"1/2	TROPICALIZATIO	ON REQUIRED						
33	T NOOLOG			(12)	ANSI 150 #	7 \							
34	FLECTRIC	AL CONNEC	rions	Y-	3/4" NPT	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~							
35		ION DEGREE			IP 65								
36	ACCESSO												
37			R CONNECT	TION OF SE	NSOR TO TRANSM	ITTER : 20 r	mt.						
38													
39	-												
40	-				_								
Vote	<u> </u>												
1010	<i>,</i>												
4					PURCH. DA	ATA							
	-				Manufact		N						
3	-				Model	EMON HOS	COFNEZZZXHTM						
2	+				- IVIOGOI	2700 810	BCHEZZZ + 22065						
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# MILANO (ITALIA)

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ISSUE FOR ORDER

DESCRIPTION

#### INSTRUMENT SPECIFICATION

1235.80.03

DWG.

SH. OF

1A12.80.002

CUSTOMER:

PLANT:

JOB:

SULPHUREX

1A12

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## MISURATORI DI MASSA E DENSITA'

FE 16.4						
SULPHONIC			DDB	LAURYL	ETOX	
ACID			MW 245	MW 207	MW 339	
FLOW	Kg/h		5092	2860	2921	
DENSITY	Kg/m3		1050	900	930	
VISCOSITY	Ср		400	50	200	
TEMPERATURE	°C		60	60	60	
PRESSURE	Bar	,	4:10	4-10	4-10	ь
MOLECULAR WEIGHT						
CALCULAT. DELTA P.	Bar					
ACCURACY	%					
DELTA P. AVAILABLE	Bar	3				
CAPACITY RANGE		60 -	115 % NORMA	AL FLOW		
			PURCH. DAT Manufactu			

Supplier

AVELLA

BY

APPR.

10.97

DATE

# BALLESTRA MILANO (ITALIA)

### INSTRUMENT SPECIFICATION

(1E35, 80.032) vg. 1A12.80.002

DWG.

CUSTOMER:

PLANT: JOB:

**SULPHUREX** 

SH. OF

Computer code: п 1A12

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#### MASS FLOW & DENSITY MEASUREMENT

1	TAG	:				FE - FIT - 16.3									
	SERVICE						MATERIAL	TO RE	ACTOR						
	PIPING	IDENT.N°	DN	MAT	ERIAL	DD - 1600		1	2"	(AISI 3	3404 )				
	FLUID	IDENT.IV	STATE				ATERIAL		LIQUID						
	SOLID CON	ITENIT	CORR				/ ( ) == ( ) ( ) ==	-		Analysis (1990)					
		G CONDITION		OOIVL	-	NO	RMAL		MINIMUM	_	MAX				
	FLOW	G CONDITION			Kg/h	1401	11171		***************************************						
	INLET PRE	COLIDE			Bar										
		IPERATURE			°C			-	***************************************						
	SPEC. WE				Kg/dm3			<del>                                     </del>							
					Cp				CONTRACTOR STATE OF THE STATE O		general grand to a stable description of the stable of the				
	VISCOSITY	and the same of the same and the same of t			Mw										
	MOLECUL	AR WEIGHT			IVIV						A STREET A SE TO THE PROPERTY OF THE STREET, THE STREE				
13		**************************************													
14	DEL E4 D	NAIL ADIT			Bar										
15		VAILABLE	TO UD	-n	Dai										
		MENT TYPE R	EQUIR	=V		חוחר	CTLY ON L	INIT	a management of the second sec						
17	SAMPLING		\					IIVE							
18	MELIEDE	PARTS MATER	KIAL			AlSI	316 L								
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20						E1 E0	TDONIO	OUTD	UT CIONAL						
21		TRANSMITTER TYPE					TRONIC		UT SIGNAL						
22	MOUNTING					LOCAL		FLOW		4- 20	mA				
23		AL SUPPLY					/ - 50 Hz	DENS							
24	FLOW RAI				Kg/h		4500	TEMP	PERATURE						
25	DENSITY I				Kg/dm3				arte in the state of the state		- 93. 73. 444. 47. 444.				
26	TEMPERA	TURE RANGE			°C										
27						-		<del> </del>			0041.				
28		. PIPE DIAMET					13 mm.		I - OUT	FULL	SCALE				
29		STRUMENT RE		R			trasmitter	ACCL	JRACY %		(4. h)				
30	LOCAL RE	SET PUSH-B	UTTON		41.00 Mark 100 Mark 1	YES- On	trasmitter				yangan and the grade of the state of the sta				
31															
32	PROCESS	CONNECTIO	N				1"	TROF	PICALIZATIO	N REQU	JIRED				
33		er gregorie is eine monomen einem eine eine eine sech men eine eine eine eine eine eine eine	*****				1 150 RF				* 11 × 11 × 11 × 11 × 11 × 11 × 11 × 11				
34	ELECTRIC	AL CONNECT	IONS			3/4"	NPT F								
35	PROTECT	ION DEGREE		Manual		<u> </u>	P 65								
36	ACCESSO														
37	1. SPECIA	L CABLE FOR	R CONN	ECTIO	N OF SE	NSOR TO	TRANSMIT	TER	: 20 n	nt.					
38															
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40 Note 4 3 (2)	153ve fo			polizano	1 GAV	MMA	Manufactu	rer F	HF-100)	4328 N					
40 Note 4 3		V 24-1270	4	0.97	1 GÅV		Manufactu	rer F		N 856 N BMI 2.	Q BN 1-22				



#### INSTRUMENT SPECIFICATION

SH.

OF

DWG. 1A12.80.002

CUSTOMER:

PLANT: JOB:

SULPHUREX 1A12

Computer code: n

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## MISURATORI DI MASSA E DENSITA'

<u> </u>	MASS FI	LOW & D	DENSIT	Y MEASURE	EMENT		
FE 16.3							
RAW MATERIAL				DDB	LAURYL	ЕТОХ	
				MW 245	MW 207	MW 339	
FLOW	Kg/h			3817	2055	2360	
DENSITY	Kg/m	3		860	820	900	
VISCOSITY	Ср			10	12	23	
TEMPERATURE	°C			50	50	50	
PRESSURE	Bar		recommendated for biblion	AMARIA UN SIPPO SALADO DE			
MOLECULAR WEIGHT							
CALCULAT. DELTA P.	Bar						,
ACCURACY	%						
DELTA P. AVAILABLE	Bar		1,5	<u> </u>	<u> </u>		
CAPACITY RANGE	And the second s		60 - 11	5 % NORMA	L FLOW		
				PURCH. DAT			
				Manufactur Madal	rer		
	<u> </u>		1	Model Supplier			
SUE FOR ORDER	10.97	AVELLA		Supplier			1



#### **INSTRUMENT SPECIFICATION**

(1E35.80.032) DWB. 1/12-80-002 SH. 8

CUSTOMER:

PLANT:

SULPHUREX

JOB:

2051

REV.

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#### MASS FLOW & DENSITY MEASUREMENT

1	Tag :		FE/ FIT 25.1						
2	Service :		SULPHUR T	O 12H1					
3	Piping IdentifN°	DN Mater.	ZF.2500 (	- 211	211 - C.S.				
4	Fluid	State	SULPHUR	and the second of the second o	LIQUID				
5	Solid content	Corrosive							
6	Operating conditions	3	Normal	Minimum	Max				
7	Flow	Kg/h	500	100	250				
8	Inlet pressure	Bar	3						none a mora servicia de la compania
9	Inlet temperature	°C	151						atory will print the trade of the second or the second
10	Specification weight	Kg/dm3	1,78						
11	Viscosity	Ср	7						
12	Molecular weight	Mw							
13	Calculated deltaP	Bar	See calcu	lation sheet					
14	Accuracy	%	See calcu	lation sheet					
15	Delta p available	Bar	1						
16	Measurement type re	equired		Mass Flow					
17	Sampling system			Directly on lin					
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 H	Z ·			*** ***********************************	
24	Flow range	Kg/h		0 - 720					
25	Density range	Kg/dm³							,
26	Temperature range	°C						-	.,
27	Local indicator on tran	nsmitter		YES					
28	Local reset push-butte	on		YES					
29	Output signal								
30	Flow			4÷20 mA	* ************************************				
31	Density	11 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1						.,	
32	Temperature								
33	Burn-out			Full scale					
34	Accuracy %			± 0,11					
35	Process connection	SIZE - TYPE	0,5"	J SE	E NOTE 3				
36	Electrical connection		3/4" - 8	Sensor n°1-Tra	ansm. n° 3				
37	Electrical construction	<u>n</u>							
38	Protection degree			IP 65					
39	Manufacturer								
40									
41	Order n°								
Not						URCHASING	ATACLE		

Note:

1. Flex cable in teflon for connection transmitter.Lenght : 10 mt

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 : CMF025H520NRAMIZZINSJKTCMF25 +

CFEPA3ACSL

: RFT-9739 DAEMA

OPDER : 291363