FLOWUAF200 BASED VERSIONS			
Versions		System Description	No. Probes for system
MN		- Medium power - Digital data transfer to control unit	2
HN		- High power - Digital data transfer to control unit	2
PRN		- With two transducers, small size and high frequency - Single probe version for installation with single hole of duct - Digital data transfer to control unit	1
SAD		- With two transducers, small size and high frequency - Digital data transfer to control unit	1 x type
MNAC		- Medium power - Digital data transfer to control unit - Internal air cooling	2
HNAC		- High power - Digital data transfer to control unit - Internal air cooling	2
PRNAC		- con 2 trasduttori, piccola taglia e alta frequenza - Single probe version for installation with single hole of duct - Digital data transfer to control unit - Internal air cooling	1
PMN		- Purge cooling - Medium power - Digital data transfer to control unit	2
PHN		- Purge cooling - High power - Digital data transfer to control unit	2
PHNS		- Purge cooling - Extremely high power - Digital data transfer to control unit	2

SATEMA

13856 VIGLIANO B.SE - Via Milano, 395
Tel. +39 015811102 - Fax 0158853029
Mail: info@satema.it http://www.satema.it

APPLICATIONS RANGES

FLOWUAF200 Models.	MATERIAL Probe	Transducer	Max Temp. gas °C	Distance active	Diam. m pipe/chimney
MN	SS, Ti	Ti	260	0.2…4	0.15…3.4
	Hastelloy			0.2…2	0.15…1.7
HN	SS, Ti	Ti		2…15 1,5…2.5 [2]	1.4…13 1.1…2.5 [3]
	Hastelloy			2…5	1.4…4.3
PRN	SS, Ti	Ti		0.27…0.28	> 0.40
SAD	SS		150	0.2…2	0.15…1.7
MNAC	SS, Ti		450	0.2…4	0.15…1.7
HNAC				2…13 1.5…2.5 [2]	1.4…11.3 1.1…2.5 [3]
PRNAC			350	0.245…0.255	> 0.40
PMN	SS		450	0.5…3	0.35…2.5
PHN	SS, Ti			1…10 1…2 [2]	0.7…8.7 0.7…2 [3]
PHNS	SS			2…13 1.5…2.5 [2]	1.4…11.3 1.1…2.5 [3]

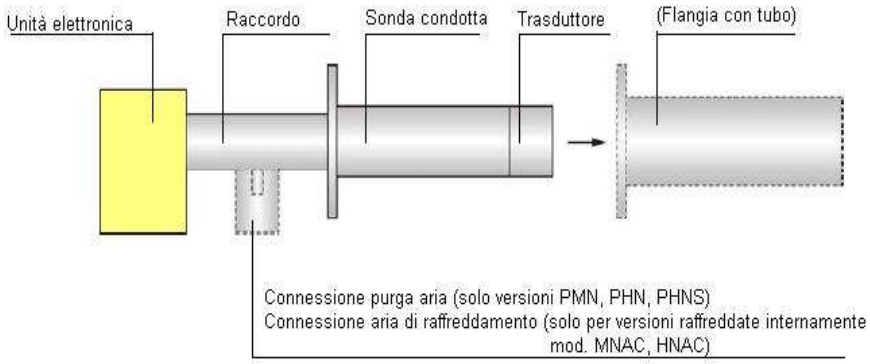
** The maximum distance depends on the content of powders, temperature and composition of gas

2) for high dust concentrations up to 100 g / m3 max

3) or installation through the section

CONFIGURATIONS OPTIONS

FLOWUAF200 Model	Stack probe							
	Nominal length in mm					Material		
	125	200	350	550	750	SS	Ti	HS
MN		X	X	X		X	X	X
HN		X	X	X	X	X	X	X
PRN			X	X	X	X	X	
SAD	X	X	X			X		
MNAC			X					
HNAC			X	X		X	X	
PRNAC				X	X	X	X	
PMN		X	X	X	X	X		
PHN		X	X	X	X	X	X	
PHNS			X	X	X	X		

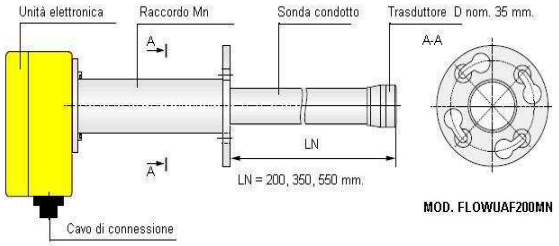


Disegno schematico dell'unità trasmettitore/ricevitore e flangia con tubo

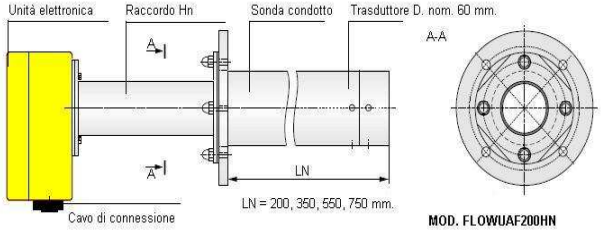
SATEMA

13856 VIGLIANO B.SE - Via Milano, 395
Tel. +39 015811102 - Fax 0158853029
Mail: info@satema.it http://www.satema.it

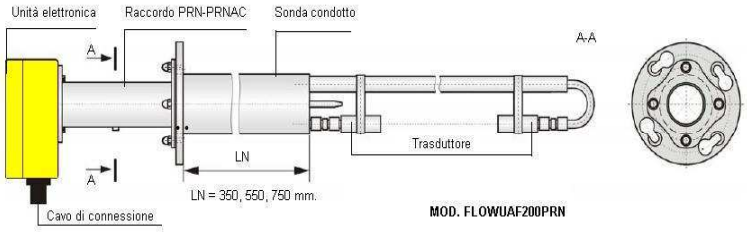
MODELS



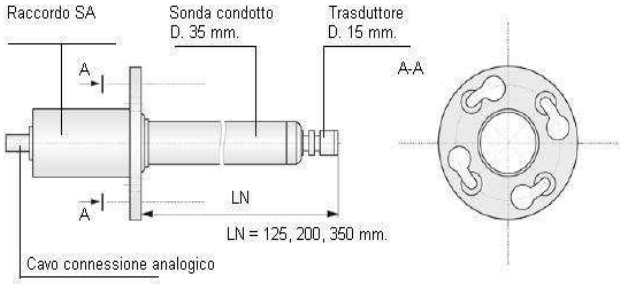
MOD. FLOWUAF200MN

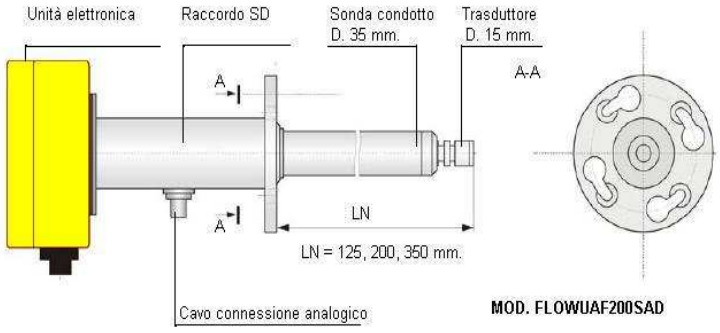


MOD. FLOWUAF200HN



MOD. FLOWUAF200PRN



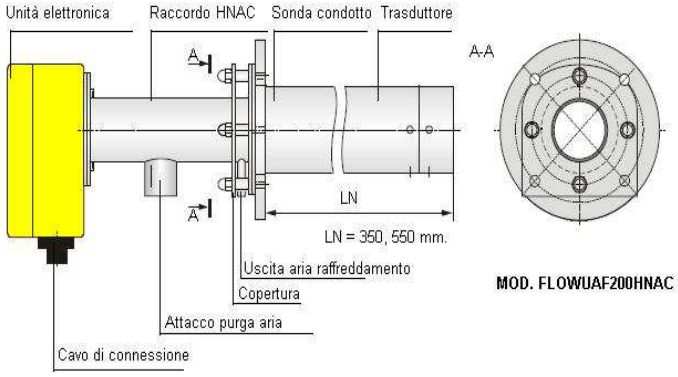


MOD. FLOWUAF200SAD

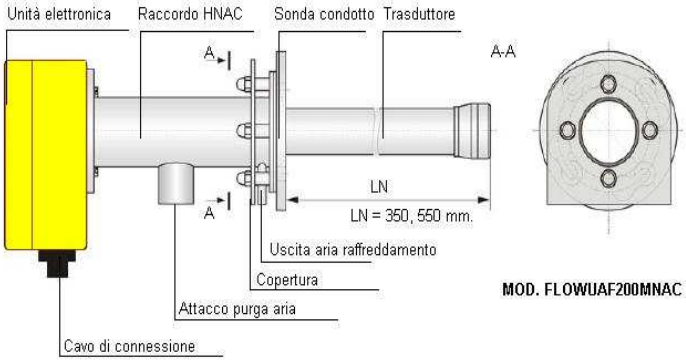
SATEMA

13856 VIGLIANO B.SE - Via Milano, 395
Tel. +39 015811102 - Fax 0158853029
Mail: info@satema.it http://www.satema.it

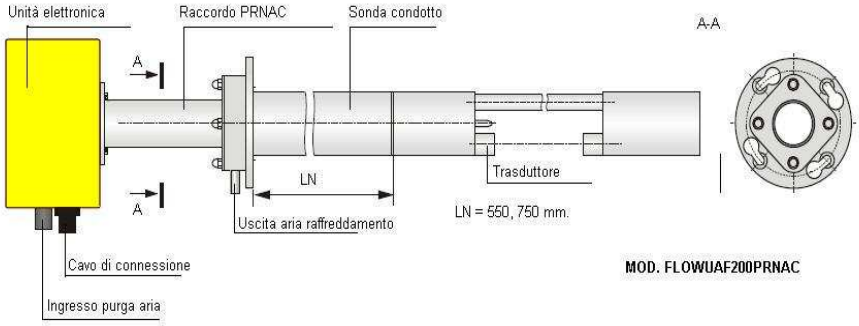
MODELS



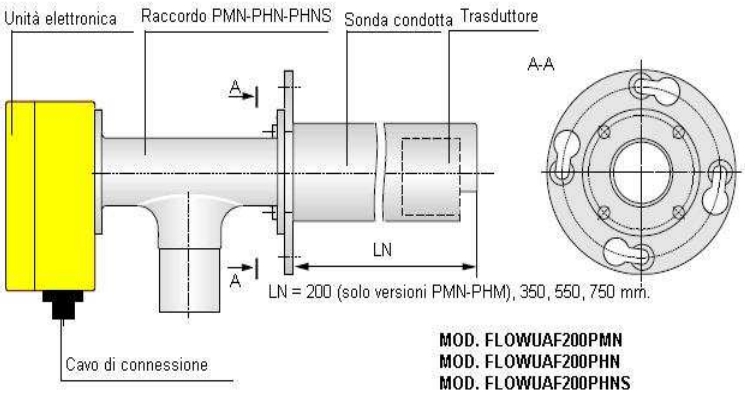
MOD. FLOWUAF200HNAC



MOD. FLOWUAF200MNAC



MOD. FLOWUAF200PRNAC

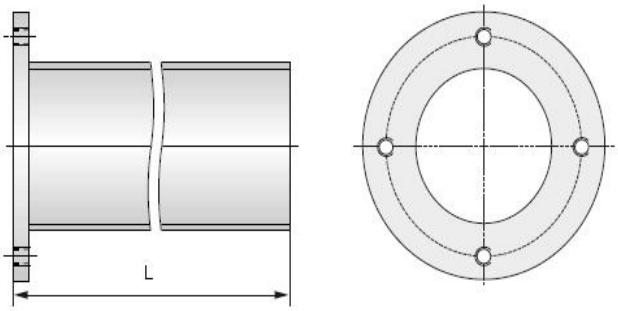


MOD. FLOWUAF200PMN
MOD. FLOWUAF200PHN
MOD. FLOWUAF200PHNS

SATEMA

13856 VIGLIANO B.SE - Via Milano, 395
Tel. +39 015811102 - Fax 0158853029
Mail: info@satema.it http://www.satema.it

FLANGE WITH PIPE

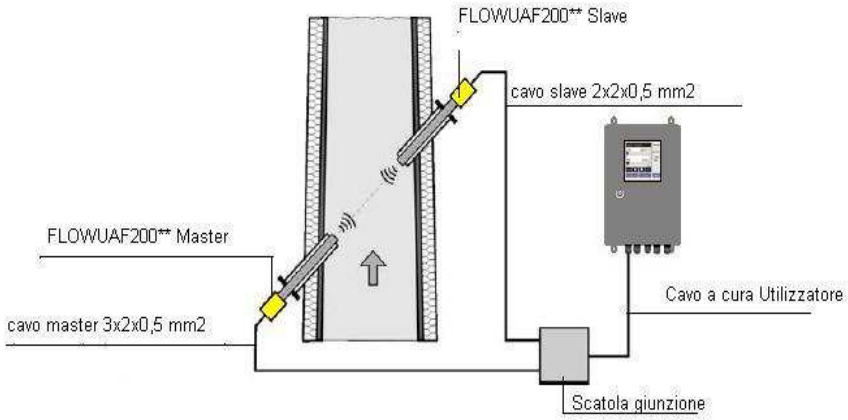


L = LN - 12

Version	Nominal length mm.	Material
S	125	St 37 V4A (other on request)
S, MN, PMN, PHN	200	
S, MN, MNAC, HN, HNAC, PRN, PMN, PHN, PHNS	350	
MN, MNAC, HN, HNAC, PRN, PRNAC, PMN, PHN, PHNS	550	
HN, PRN, PRNAC, PMN, PHN, PHNS	750	

CABLES (MASTER-SLAVE) and BOX JUNCTION

Cavi standard
- Master lungh. 5, 10 m
- Slave lungh. 5, 10, 50 m.



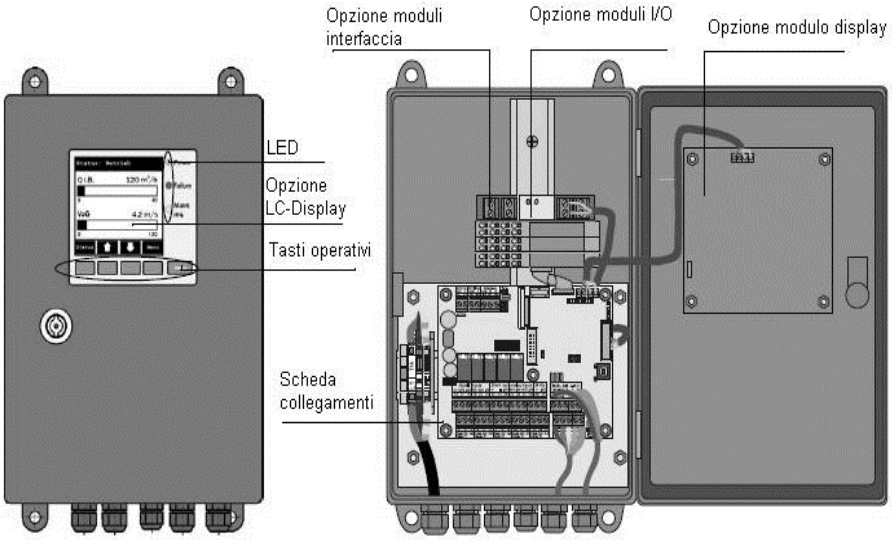
La distanza tra la scatola di giunzione e l'unità elettronica AFU100, può raggiungere i 1000 mt.

OUTDOOR AIR PURGE (OPTIONAL)

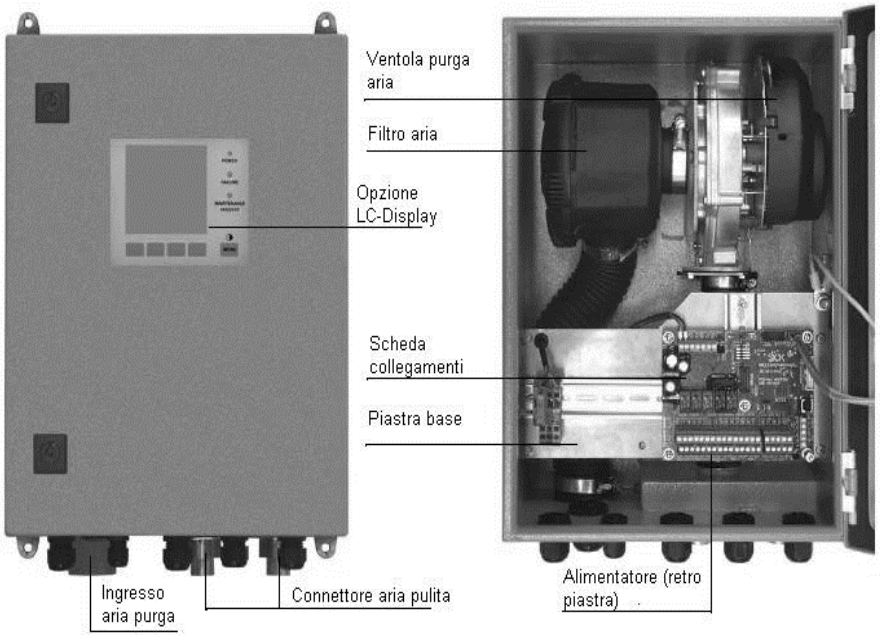
UNITA' ESTERNA PURGA ARIA PER VERSIONI PMN, PHN, PHNS

SATEMA
13856 VIGLIANO B.SE - Via Milano, 395
Tel. +39 015811102 - Fax 0158853029
Mail: info@satema.it http://www.satema.it

CONTROL UNIT AFU100



CONTROLLO ELETTRONICO CON OPZIONI - SENZA FORNITURA ARIA DI PURGA MOD. AFU100ND***



CONTROLLO ELETTRONICO CON PURGA D'ARIA INTEGRATA MOD. AFU100PD***

The control units are available in two versions:

AFU100ND For the connection of the transmitters / receivers FLOWUAF200 version MN, HN, PRN, SAD, PMN, and PHN PHSN

AFU100PD For the connection of the transmitters / receivers FLOWUAF200 version MNAC, HNAC. The unit is equipped with: fan air filter and air connections for pipes DN 25 (order separately).

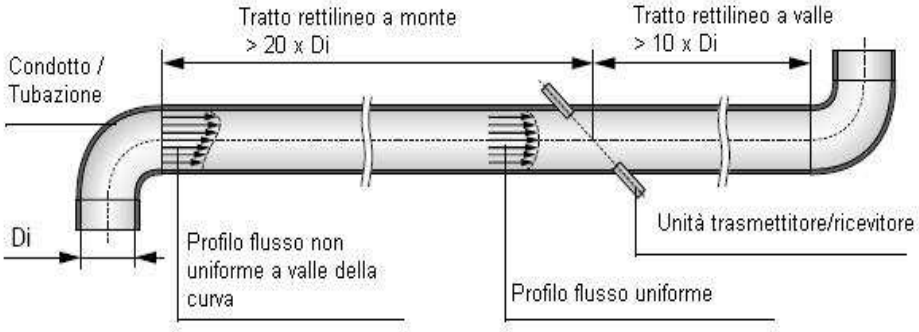
Features Inputs and outputs standard and optional features:

Analog Output	Analog Input	Output relais	Digital input	Serial Interfaces
1 x 0/2/4…22 mA (active) Programmable as: speed, actual flow rate, normalized flow rate, temperature Resolution 12 bits	2 x 0…5/10 V (no isolated) or 0…20 mA for variables calculation (temperature, pressure, humidity), resolution 12 bits	5 x SPDT contact 120V AC, 1A for signaling status signals: operating status, maintenance, cycle control, alarm warnings/limits	4 x free contacts for: maintenance start, triggering, remote control, occurs zero sep, verification span	- USB 1.1 and RS232 (terminals) device for querying and updating firmware - RS485 sensors connection

SATEMA

13856 VIGLIANO B.SE - Via Milano, 395
Tel. +39 015811102 - Fax 0158853029
Mail: info@satema.it http://www.satema.it

INSTALLATION RULES



For rectangular ducts, the minimum recommended length of straight sections upstream is calculated based on the equivalent circular section.
According to the following formula:

D circular equivalent = $1{,}265*((a*b)^{0,6}) / (a+b)^{0,2}$

where a and b are the inner sides of the duct

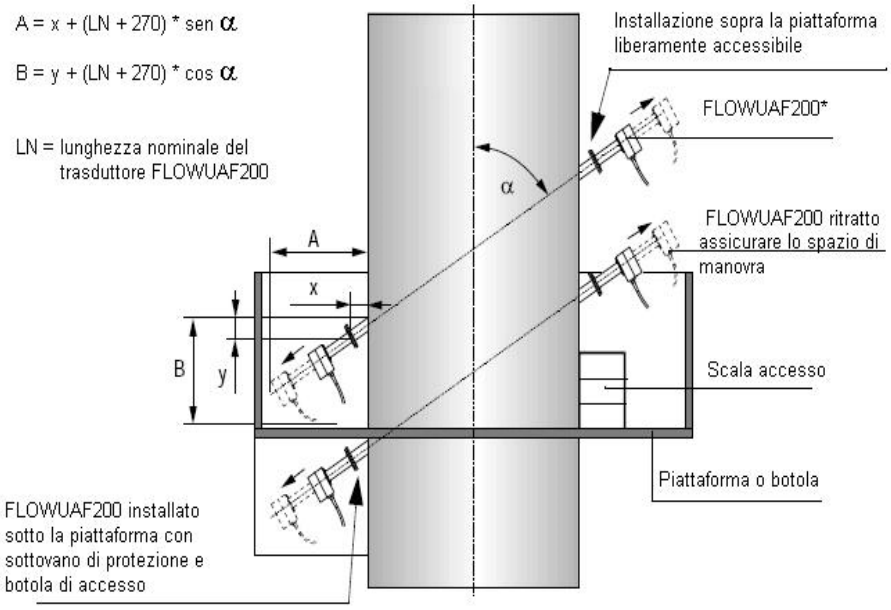
SATEMA
13856 VIGLIANO B.SE - Via Milano, 395
Tel. +39 015811102 - Fax 0158853029
Mail: info@satema.it http://www.satema.it

INSTALLATION RULES

Tipologie di installazione: i trasduttori possono essere installati indifferentemente in condotti verticali, orizzontali o inclinati. Per i condotti verticali è raccomandata una minima distanza dall'uscita del camino di 30 mt. per prevenire disturbi causati da pioggia o condensa sulla testa del sensore. Devono altresì essere evitate qualsiasi fonte di vibrazione. Se è prevista un'unità di purga d'aria, questa deve essere montata in posizione tale da consentire un prelievo in aspirazione di aria pulita.

I trasduttori devono essere installati in posizione che assicuri la massima facilità di intervento per manutenzione e/o verifiche. Se necessario provvedere all'installazione di una comoda e sicura piattaforma con mancorrenti di protezione.

Nei condotti verticali, l'angolo di installazione è in funzione del diametro degli stessi in modo che sia necessaria un'unica passerella di servizio.

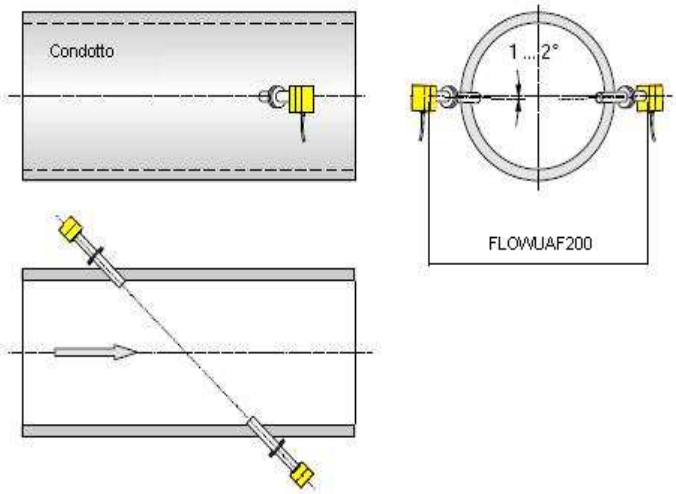


Installazione FLOWUAF200 su condotto verticale

* illustrata la versione MN

INSTALLAZIONE IN CONDOTTI ORIZZONTALI

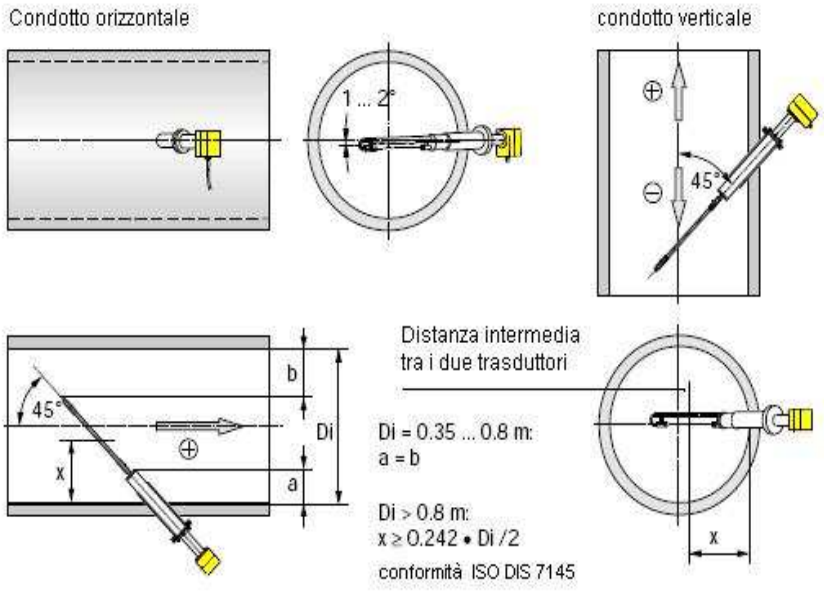
In condotti orizzontali i trasduttori devono essere installati orizzontalmente rispetto all'asse della tubazione e leggermente inclinati per prevenire disturbi dovuti a condense.



SATEMA

13856 VIGLIANO B.SE - Via Milano, 395
Tel. +39 015811102 - Fax 0158853029
Mail: info@satema.it http://www.satema.it

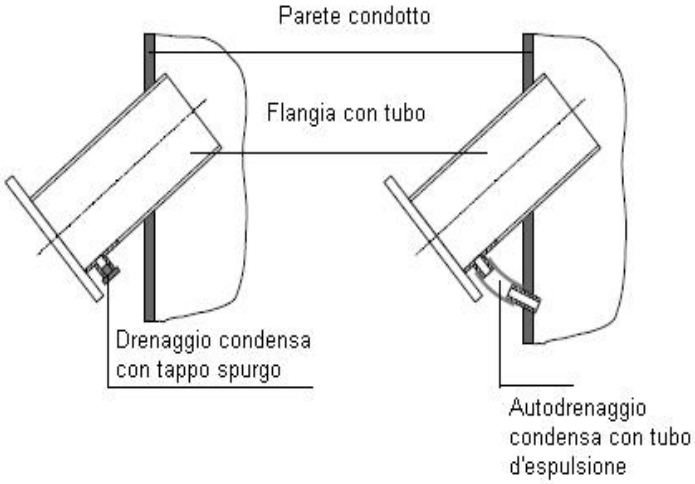
INSTALLATION RULES



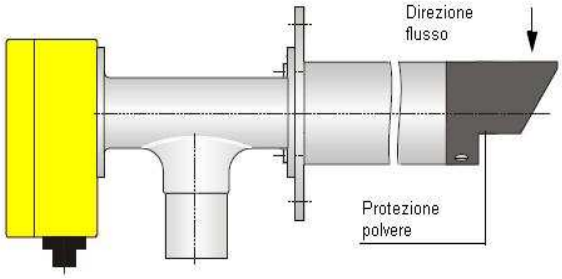
x = distanza dalla parete interna del punto di velocità media

INSTALLAZIONE DELLA VERSIONE FLOWUAF200PRN e PRNAC

A reverse flow in vertical pipes with direction from top to bottom determines a reading with a negative sign on the electronic unit. Can be compensated with an appropriate positive coefficient as described in the manual.



With high dust content > 1 g / m3, the distance of measurement must be as short as possible. Therefore requires an installation angle of 60°. A further protection can be installed on the downstream transmitter (FLOWUAF200 version PHN, PHNS, HN and HNAC), to prevent particles impact bouncing on the surface of the transducer.



SATEMA
13856 VIGLIANO B.SE - Via Milano, 395
Tel. +39 015811102 - Fax 0158853029
Mail: info@satema.it http://www.satema.it

INSTALLATION RULES

For ducts lined (eg. Rubber) is necessary to select tubes flange with larger ID. The minimum distance between the tube probe is the flange is 3 mm. And 'safe to install the pipe flange before coating of the duct.

For the conduits of plastic material can not be used directly standard flanges. Possible solutions by the user are: rolling on the steel on the pitch diameter of the mounting hole. Use flanges of the same material of the pipe: complete the assembly by welding or gluing. Fit adapter flange made to the drawing.

Calculating the nominal length of the flanges with pipe

Lf =	minimum length flange with pipe
Le =	minimum insertion length 20 mm
D_A =	outer diameter of the flange
D_R =	outside diameter of the tube
α =	installation angle
s =	flange thickness = 10
L =	measurement path active (input value)
w =	thick wall pipe + insulation
Di =	internal diameter pipe

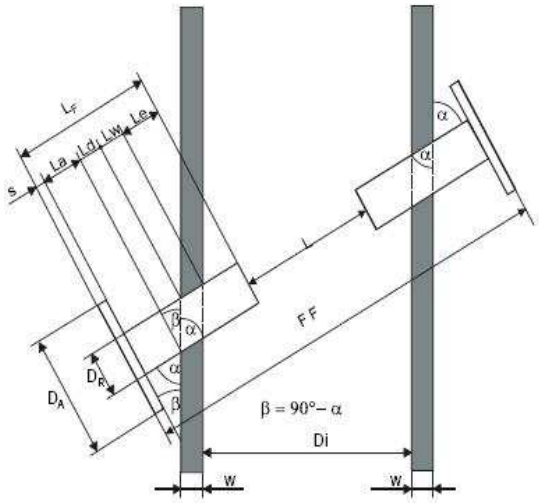
$$Lw = \frac{w}{\sin\alpha}$$

$$Ld = D_R \cdot \tan\beta$$

$$La_{min} = \frac{(D_A - D_R)}{2} \cdot \tan\beta$$

$$L_{Fmin} = s + \frac{(D_A + D_R)}{2} \cdot \tan(90° - \alpha) + \frac{w}{\sin\alpha} + Le$$

$$L = \frac{Di}{\sin\alpha} - 2 \cdot Le - Ld$$



Dimensioni in mm.

The maximum thickness of the wall (and isolation) in function of the nominal length of the flange with the tube, the flange size (tube diameter DR) and angle of installation (Le = 20 mm).

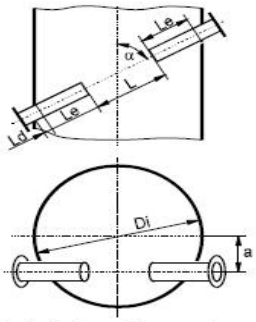
L_F nominal length mm	Maximum wall thickness (and isolation) w mm					
	D_R = 114,3		D_R = 76,1		D_R = 48,3	
	α = 45°	α = 60°	α = 45°	α = 60°	α = 45°	α = 60°
125					15	45
200			49	97	68	110
350	112	196	155	227	174	240
550	253	369	297	400	315	413
750	395	543	438	573		

To prevent problems in the transmission of the signal in some applications (eg. With versions HN, HNAC, PHN, PHNS), it may be necessary to reduce the distance measurement by extending the distance of insertion inside the ear with ear tilted or flanges tube through a secant.

L =	measurement path active
Le =	20…500 mm
a max =	Di / 4
α =	60°
Ld =	D_R * tan β

with a = a_{max} for circular conduit when α = 60°

Di_{max} = L+2 Le + Ld



Installazione attraverso la secante

SATEMA

13856 VIGLIANO B.SE - Via Milano, 395
Tel. +39 015811102 - Fax 0158853029
Mail: info@satema.it http://www.satema.it

INSTALLATION RULES

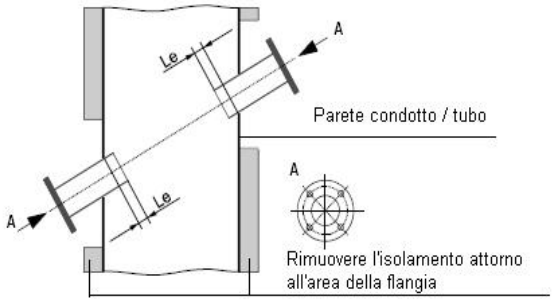
Correlation between the internal diameter Di and the measurement distance L as a function of insertion length and the type of installation.

Values in mt.

Di	DISTANZA DI MISURA L a 60°, Le a diverse profondità di inserzione											
	Diametro										Secante	
	Le=0.05	Le=0.10	Le=0.15	Le=0.20	Le=0.25	Le=0.30	Le=0.35	Le=0.40	Le=0.45	Le=0.50	Le=0.50	a_{max}
1.00	1.01											
1.05	1.07											
1.10	1.13	1.03										
1.15	1.18	1.08										
1.20	1.24	1.14	1.04									
1.25	1.30	1.20	1.10	1.00								
1.30	1.36	1.26	1.16	1.06								
1.35	1.41	1.31	1.21	1.11	1.01							
1.40	1.47	1.37	1.27	1.17	1.07							
1.45	1.53	1.43	1.33	1.23	1.13	1.03						
1.50	1.59	1.49	1.39	1.29	1.19	1.09						
1.55	1.65	1.55	1.45	1.35	1.25	1.15	1.05					
1.60	1.70	1.60	1.50	1.40	1.30	1.20	1.10	1.00				
1.65	1.76	1.66	1.56	1.46	1.36	1.26	1.16	1.06				
1.70	1.82	1.72	1.62	1.52	1.42	1.32	1.22	1.12	1.02			
1.75	1.88	1.78	1.68	1.58	1.48	1.38	1.28	1.18	1.08			
1.80	1.93	1.83	1.73	1.63	1.53	1.43	1.33	1.23	1.13	1.03		
1.85	1.99	1.89	1.79	1.69	1.59	1.49	1.39	1.29	1.19	1.09		
1.90		1.95	1.85	1.75	1.65	1.55	1.45	1.35	1.25	1.15		
1.95		2.01	1.91	1.81	1.71	1.61	1.51	1.41	1.31	1.21		
2.00			1.97	1.87	1.77	1.67	1.57	1.47	1.37	1.27		
2.05				1.92	1.82	1.72	1.62	1.52	1.42	1.32	1.01	0.51
2.10				1.98	1.88	1.78	1.68	1.58	1.48	1.38	1.06	0.53
2.15					1.94	1.84	1.74	1.64	1.54	1.44	1.11	0.54
2.20					2.00	1.90	1.80	1.70	1.60	1.50	1.16	0.55
2.25						1.95	1.85	1.75	1.65	1.55	1.21	0.56
2.30							1.91	1.81	1.71	1.61	1.26	0.58
2.35							1.97	1.87	1.77	1.67	1.31	0.59
2.40								1.93	1.83	1.73	1.36	0.60
2.45								1.99	1.89	1.79	1.41	0.61
2.50									1.94	1.84	1.46	0.63
2.55									2.00	1.90	1.51	0.64
2.60										1.96	1.56	0.65
2.65											1.61	0.66
2.70											1.66	0.68
2.75											1.71	0.69
2.80											1.76	0.70
2.85											1.81	0.71
2.90											1.86	0.73
2.95											1.91	0.74
3.00											1.96	0.75

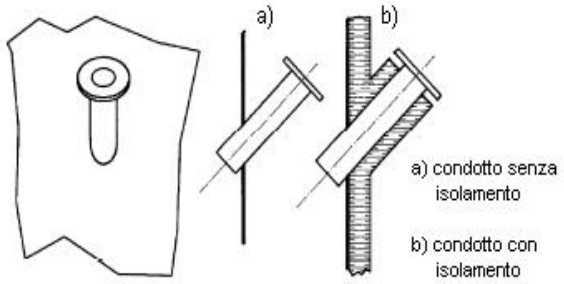
SATEMA

13856 VIGLIANO B.SE - Via Milano, 395
Tel. +39 015811102 - Fax 0158853029
Mail: info@satema.it http://www.satema.it

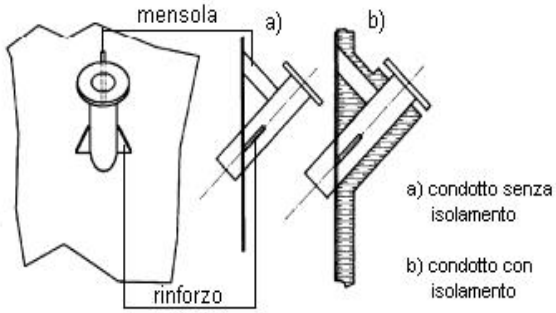


Opzioni di installazione per le flange con tubo

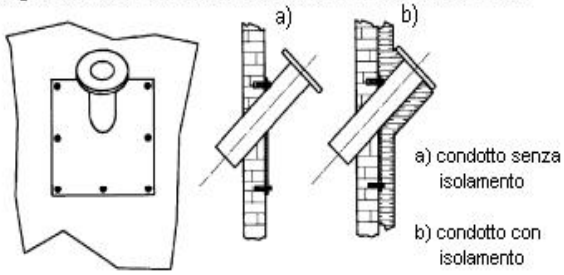
Flangia con tubo saldato ad un condotto in acciaio pesante



Flangia con tubo saldato ad una parete sottile



Flangia con tubo montata su condotti in mattone o cemento



SATEMA
13856 VIGLIANO B.SE - Via Milano, 395
Tel. +39 015811102 - Fax 0158853029
Mail: info@satema.it http://www.satema.it