

HD 9408T BARO
HD 9408TR BARO
HD 9908T BARO
HD 9408PS 50

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 Trasmittitori barometrici
 Presa statica per misure barometriche
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 Barometric pressure transmitters
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 Transmetteurs de pression barométrique
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 Transmitter für barometrischen Druck
 Statische Buchse für barometrische Messungen
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 Transmisores de presión barométrica
 Toma estática para mediciones de presión barométrica



HD9408PS 50
PRESA STATICA PER MISURE BAROMETRICHE

[I] DESCRIZIONE

La misura della pressione barometrica in campo libero può dare valori errati di varie centinaia di Pascal a causa delle fluttuazioni e direzione del vento. Con la presa statica per misure barometriche HD9408PS 50 è possibile minimizzare tali errori perché, oltre a fungere da filtro (freno) contro le pressioni dinamiche del vento, permette al barometro di funzionare correttamente anche in presenza di neve o ghiaccio e rientrare nelle raccomandazioni del WMO (Organizzazione Mondiale di Meteorologia). I materiali impiegati per la costruzione della presa statica sono resistenti agli UV e possono operare nel campo di temperature tra -40°C e +80°C.

INSTALLAZIONE E CONNESSIONE

L'installazione è semplice: deve essere installata lontano da edifici, alberi o qualsiasi altra fonte che possa perturbare il fluire del vento. Per l'installazione è disponibile la staffa supporto HD9408PS 56 e tre viti in Acc. Inox M5x16. Il collegamento della presa statica al barometro, per es. HD9408T o HD9408TR, è fatto con un tubo speciale HV55 (Ø interno 3mm, Ø esterno 6mm) resistente agli UV e alle variazioni climatiche. Le operazioni di manutenzione o pulizia sono minime. Le parti in plastica sono in LURAN S777K prodotto dalla BASF. Per la pulizia usare detergenti non aggressivi compatibili con il materiale.

CARATTERISTICHE TECNICHE

Secondo le raccomandazioni del WMO, la deviazione della misura ammessa con velocità del vento di 20metri/secondo è di 0.3mbar pari a 300Pascal. La presa statica di misure barometriche HD9408PS 50 rientra in tale valore. Le tabelle che seguono riportano i valori ottenuti dalle prove eseguite in galleria del vento.

CODICI DI ORDINAZIONE

HD9408T BARO Trasmettitore barometrico 800÷1100 mbar uscite 0÷1 V (a richiesta: 0÷5V, 1÷5V, 4÷20 mA) campo di lavoro in temperatura -30°C ÷ +60°C

HD9408TR BARO Trasmettitore barometrico 800÷1100 mbar uscite 0÷1 V (a richiesta: 0÷5V, 1÷5V). Riscaldato, campo di lavoro in temperatura -40°C ÷ +60°C

HD9908T BARO Trasmettitore barometrico con indicazione LCD campo di misura 800÷1100 mbar. Uscite: 0÷20 mA, 4÷20 mA, 0÷1 V, 0÷5 V. Campo di lavoro in temperatura: -20°C ÷ +60°C.

HD9408PS 50K Kit composto dalla presa statica, staffa di ancoraggio al palo e tubo HV55

HD9408PS 50 Presa statica per misure di pressione barometriche completo di tubo HV55

HD9408PS 56 Staffa di supporto per presa statica, fissaggio barometro, ancoraggio al palo

HV55 Tubo di silicone HV55 resistente agli UV e temperatura, Ø interno 3mm, Ø esterno 6mm, L=400mm

[GB]

[GB] GENERAL DESCRIPTION

HD 9408T BARO, HD 9408TR BARO and **HD 9908T BARO** are analog output electronic barometers. The piezoresistive sensor gives extremely accurate and stable measurement of atmospheric pressure and assures excellent repeatability, low hysteresis and very good temperature stability. The output signal of the sensor is conditioned to provide a voltage or a current output linearly proportional to the barometric pressure. The transmitters are ready to use as they have been factory calibrated. An offset adjustment potentiometer is available for station elevation.

HD9408T BARO requires a DC supply voltage, its low power consumption (< 4 mA) makes it suitable for portable and remote battery or solar powered applications. It is available in different kinds of analog output: 0-1 Vdc, 0-5 Vdc (1-5 Vdc, 1-6 Vdc on request) or 4-20 mA (two wires).

HD 9408TR BARO offers higher temperature performance: the internal circuitry allows the sensor to work at constant temperature so that it achieves accurate temperature compensation over the whole range from -40°C to +60°C.

HD 9408TR BARO requires a continuous DC supply voltage. It is available in different output versions: 0÷1 Vdc, 0÷5 Vdc (1÷5 Vdc, 1÷6 Vdc on request).

HD 9908T BARO, is a barometric transmitter equipped with a 3 ½ digi display (1 mbar resolution) showing pressure measurements it has a 0÷20 mA, 4÷20 mA, 0÷1 V and 0÷5 V (0÷10 V on request) analog output configurable by the customer and an ON/OFF relay with programmable alarm threshold.

HD 9908T BARO requires a 24 Vac (or 220 Vac on request) power supply.

HD 9408T BARO, HD 9408TR BARO and **HD 9908T BARO** are low cost and high -performance solutions for meteorological applications, environmental monitoring systems, weather and environmental data logging, barometric pressure compensation for internal combustion engine performance, cleanroom barometric pressure compensation, automotive emission test.

HOUSING AND INSTALLATION

In all models the sensor and the electronics are housed in a sturdy MACROLON box (degree of protection IP67). When the lid is opened, holes allow fixing the base of the transmitter to a panel or surface. The precision of measurement does not depend on the position of the transmitter. However it is advisable to fit the transmitter in such a way that the sensor is facing downwards so as to minimize the accumulation of dust or dirt

on the filter.

If the transmitter is installed in an outdoor location, it is recommended to use a pressure port which minimizes the errors caused by the wind flow.

CONNECTION DIAGRAM AND OPERATION

- Make the power connections for the HD 9908T BARO.
 - Make the connections for the relay output, the relay contact is free.
 - Select the analog output 0÷20 mA, 4÷20 mA, 0÷1 V, 0÷5 V by means of the jumper.
 - Power the instrument, press the PUSH button and turn the SET trimmer to set the desired threshold value between 800 and 1100 mbar; the set value is shown on the LCD display.
 - Using the trimmer \square , set the desired HYS (=hysteresis) value between 5 and 50 mbar.
 - The instrument will now indicate the barometric pressure; HI led, LO led or ALARM led and ALARM relay will perform as shown in table 1.
- NOTE: the ALARM led on indicates that the relay is energized and the contact is closed.
- **Once the installation is complete, make sure that the cover is perfectly closed; the same applies to the grommets.**

TABLE 1	HI	LO	ALARM LED
MEASURE > SET, MEASURE < SET + HYS	ON	OFF	OFF
MEASURE > SET, MEASURE > SET + HYS	ON	OFF	ON
MEASURE < SET, MEASURE > SET - HYS	OFF	ON	OFF
MEASURE < SET, MEASURE < SET - HYS	OFF	ON	ON

	HD9408T BARO	HD9408TR BARO	HD9908T BARO
Sensor type	Piezoresistive diaphragm		
Measuring range	800 ÷ 1100 mbar / 600 ÷ 1100 mbar on request		
Analog output	0 ÷ 1 Vdc standard; 0 ÷ 5 Vdc, 1 ÷ 5 Vdc, 1 ÷ 6 Vdc and 4 ÷ 20 mA (two wires) on request	0 ÷ 1 Vdc standard; 0 ÷ 5 Vdc, 1 ÷ 5 Vdc and 1 ÷ 6 Vdc on request	0 ÷ 20 mA, 4 ÷ 20 mA, 0 ÷ 1 V and 0 ÷ 5 V (0 ÷ 10 V on request), configurable by means of a jumper.
Accuracy	± 0.4 mbar, @ 20°C	± 0.4 mbar, @ 20°C	Display: ± 1 mbar, @20°C Analog output: ± 0,8 mbar, @ 20°C
Resolution	Infinite	Infinite	Display: 1 mbar Analog output: Infinite
Temperature drift	< 1% F.S., zero; <1% F.S., span from -20°C to +60°C (-4° to 140°F)	± 0.8 mbar from -40°C to +60°C (-40° to 140°F)	< 1% F.S. zero, <1% F.S. span from -20°C to +60°C (-4° to 140°F)
Long-term stability	< 0.25 % F.S. over 6 months at 20°C	< 0.2 % F.S. over 6 months at 20°C	< 0.25 % F.S. over 6 months at 20°C
Stabilization time	1 sec. at 99% of measurement	5 min @ 24 Vdc supply at 99% of measurement	5 sec. at 99% of measurement
Response time	< 200 msec. to reach full accuracy after a pressure step		
Contact	Absent	Absent	3A/220 Vac resistive load
Set point	Absent	Absent	Configurable from 800 to 1100 mbar
Supply Voltage	8 ÷ 35 Vdc	12 ÷ 35 Vdc	24 Vac ±10% (230 Vac on request)
Supply current	< 4 mA	25 mA @ 20°C, 24 Vdc (warm-up 120 mA)	1VA
Operating Temperature	-30 ÷ +60°C	-40 ÷ +60°C	-20 ÷ +60°C
Media compatibility	Air and dry gases only		
Over pressure	2 bar - 30 psi		

HD9408PS 50
STATIC PORT FOR BAROMETRIC MEASUREMENTS

[GB] GENERAL DESCRIPTION

The measurement of barometric pressure in free field can give wrong values, of hundreds of pascal, because of wind fluctuation and direction. The HD9408PS 50 static port for barometric measurements minimizes such errors, because, besides working as a filter (brake) against the wind dynamic pressures, it allows the barometer to work properly, even in the presence of snow or ice, as well as to conform to the WMO recommendations (World Meteorology Organization). The materials in are UV-resistant and can operate in the temperature range between -40°C and +80°C.

INSTALLATION AND CONNECTION

The instrument is easy to install and it has to be placed far from buildings, trees or any other source that might disturb the flow of the wind. The HD9408PS 56 mounting bracket and three M5x16 Stainless Steel screws are available to fix the port properly. The connection of the static port to the barometer, i.e. either to a HD9408T or to a

HD9408TR, is carried out through the HV55 special tube (inside Ø : 3mm, outside Ø : 6mm), which is resistant to climate changes and UV. Maintenance and cleaning are very simple. Plastic parts are in LURAN S777K, manufactured by BASF. It is strongly suggested to use non-aggressive cleaners, compatible with the plastic material.

TECHNICAL SPECIFICATIONS

According to the WMO recommendations, the allowed measurement deviation at a 20meters/second wind speed is 0.3mbar, corresponding to 300 Pascal. The HD9408PS 50 static port for barometric measurements complies with this value. The following tables show the values obtained by the tests made in the wind tunnel.

ORDERING CODES

HD9408T BARO Barometric, transmitter output 0÷1Vdc, measuring range 800÷1100mbar. On request output: 0÷5Vdc, 1÷5Vdc, 1÷6Vdc, 4÷20mA, working temperature -30°C ÷ +60°C.

HD9408TR BARO Barometric transmitter, 800÷1100mbar, output 0÷1Vdc. On request output 0÷5Vdc, 1÷5Vdc. Temperature working range -40°C ÷ +60°C, sensor heated.

HD9908T BARO Barometric transmitter, 800÷1100mbar with LCD indication. Outputs: 0÷20mA, 4÷20mA, 0÷1Vdc, 0÷5Vdc. Working temperature -20°C ÷ +60°C.

HD9408PS 50K Kit composed of static port, mast mounting bracket and HV55 tube

HD9408PS 50 Static port for barometric measurements equipped with HV55 tube

HD9408PS 56 Mounting bracket for static port, barometer and mast fitting

HV55 Silicone tube resistant to UV and temperature, inside Ø : 3mm, outside Ø : 6mm, L=400mm

mA, 4÷20 mA, 0÷1 V et 0÷5 V (0÷10 V sur demande) configurable par le client, d'un relais de sortie ON/OFF et d'un seuil d'alarme programmable.

HD 9908T BARO est alimenté en 24 Vac (ou 220 Vac sur demande).

Les transmetteurs **HD 9408T BARO**, **HD 9408TR BARO** et **HD 9908T BARO** sont des solutions très économiques avec d'excellentes performances pour des applications météorologiques, en suivi environnemental, de temps, des applications d'altitude, la compensation de pression atmosphérique dans la combustion interne des moteurs, de salles blanches, d'émissions lors de tests sur l'équipement.

MONTAGE ET INSTALLATION

Dans tous les modèles, la sonde et électronique sont montés dans un solide boîtier MACROLON (degré de protection IP67). Quand le couvercle est ouvert, les trous sont accessibles, ce qui permet à la base du transmetteur d'être fixé sur la surface du panneau. La précision de la mesure est indépendante de la position du transmetteur. Cependant il est conseillé d'ajuster le transmetteur avec la sonde vers le bas afin de minimiser l'accumulation de la poussière et de la saleté dans le filtre. Si l'installation est extérieure, il est recommandé d'utiliser un port de pression qui minimise les erreurs causées par le souffle du vent.

[F]

[F] DESCRIPTION

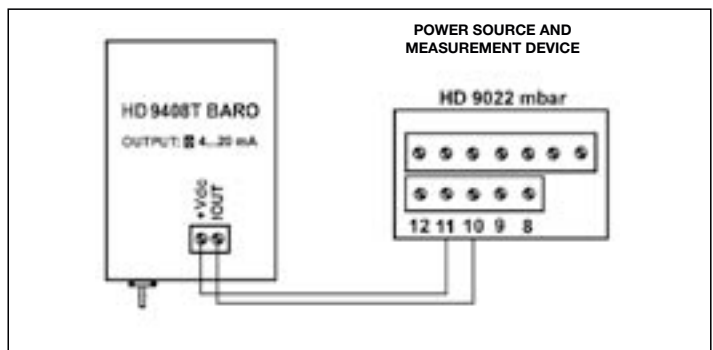
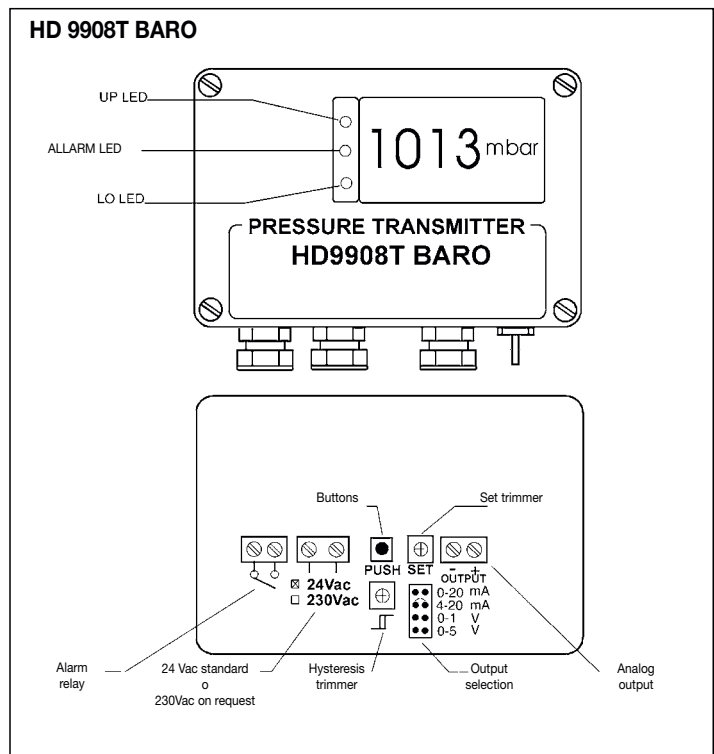
Les modèles **HD 9408T BARO**, **HD 9408TR BARO** et **HD 9908T BARO** sont des baromètres électroniques à sortie analogique. Ils utilisent un capteur piezoresistif qui garanti une stabilité et une exactitude de la mesure et assure une faible hystérésis, une excellente répétitivité et une bonne stabilité en température. Le signal de sortie de la sonde est conditionné de façon à délivrer une sortie tension ou une sortie courant linéaire proportionnelle à la pression barométrique. Les transmetteurs, calibrés en usine, sont prêts à l'emploi. Un potentiomètre de mise au point du zéro est utilisable pour compenser l'installation en altitude.

HD 9408T BARO est alimenté en tension continue, sa faible consommation (< 4 mA) permet d'utiliser des piles ou une alimentation solaire. Il propose différentes sorties analogiques: 0÷1 Vdc, 0÷5 Vdc, (1÷5 Vdc, 1÷6 Vdc sur demande) ou 4÷20 mA (connexion à deux fils).

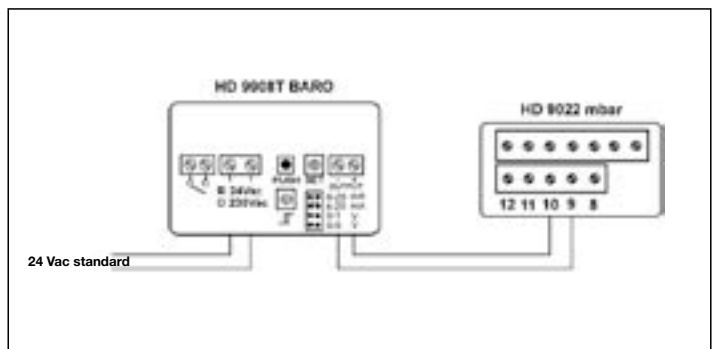
HD 9408TR BARO offre de meilleurs résultats par rapport à la température: le circuit électronique permet à la sonde de travailler à une température constante, ce qui assure une compensation en température sur la plage complète -40°C à +60°C.

Il est alimenté en tension continue. Il est disponible en différentes sorties analogiques: 0÷1 Vdc, 0÷5 Vdc (1÷5 Vdc, 1÷6 Vdc sur demande).

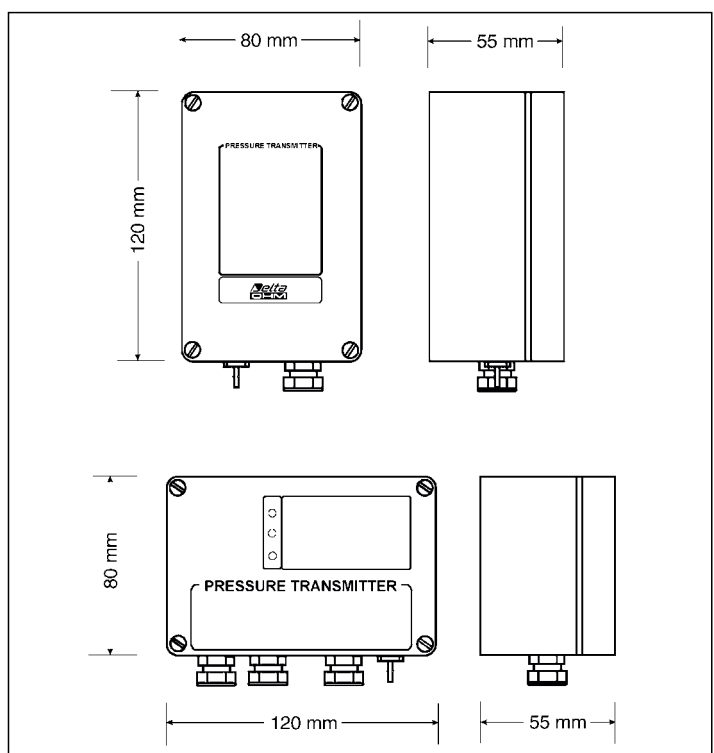
HD 9908T BARO, au contraire des autres modèles, est équipé d'un écran 3 chiffres ½ (Résolution 1mbar) montrant les mesures de pression, d'une sortie analogique 0÷20



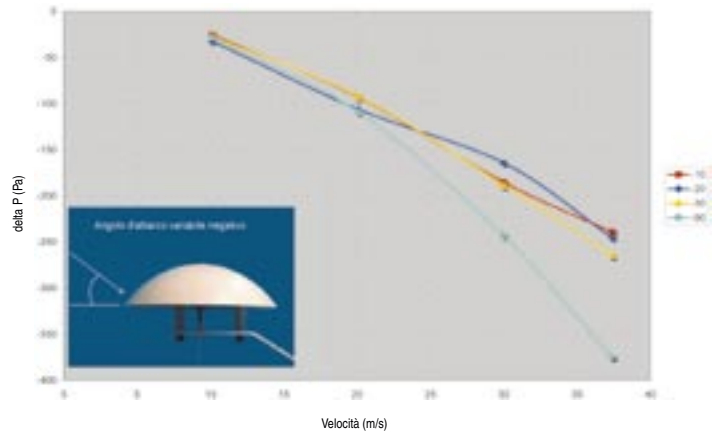
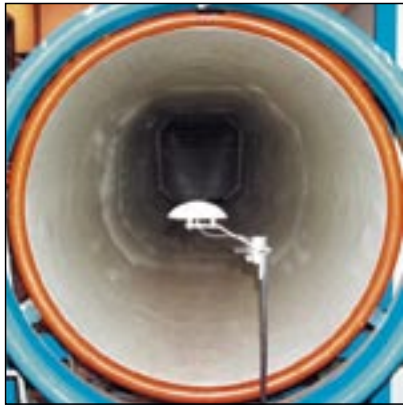
HD 9408T BARO 4÷20 mA OUTPUT (two wire)



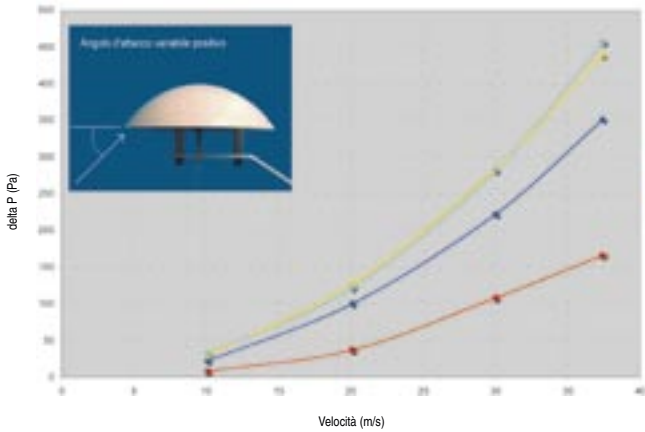
HD 9908T BARO 4÷20 mA OUTPUT



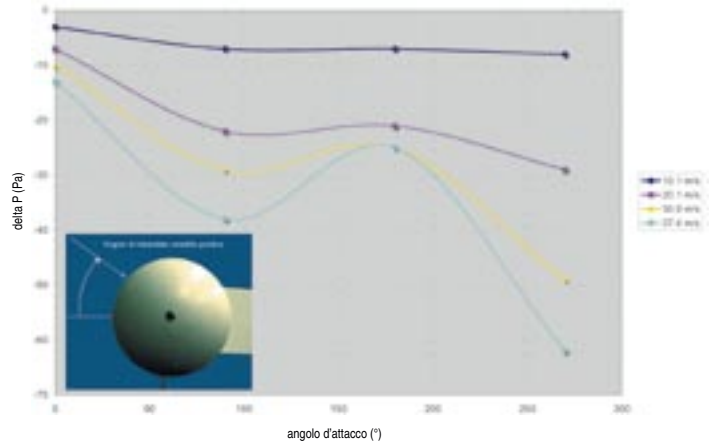
TESTS MADE IN THE WIND TUNNEL



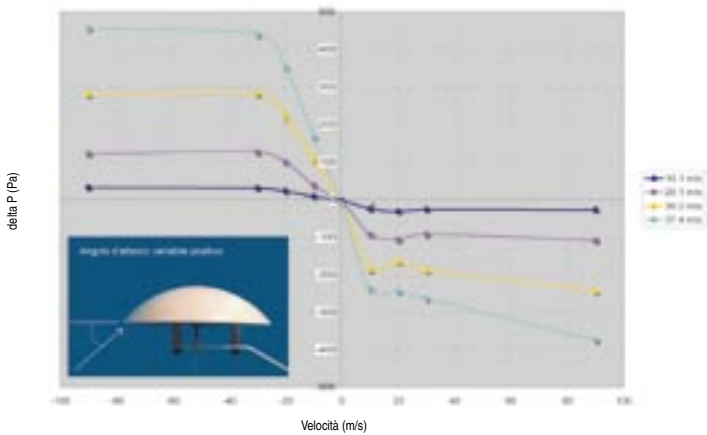
ΔP according to the yaw angle β (join angle $\alpha = 0^\circ$)



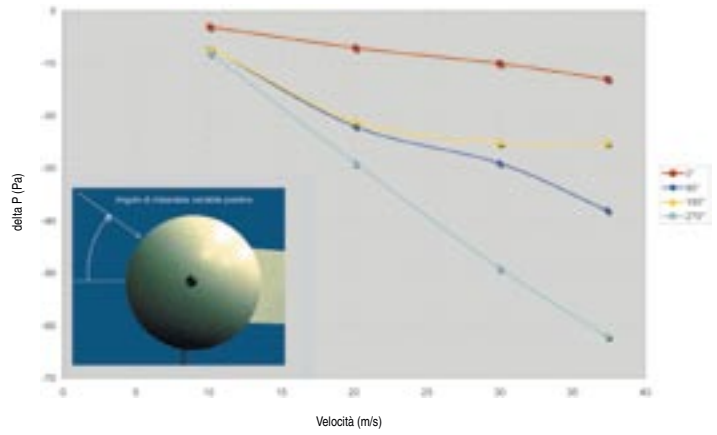
ΔP according to the β yaw angle



ΔP according to the join angle α (yaw angle $\beta = 0^\circ$)



ΔP according to the α join angle



ΔP according to the α join angle (yaw angle $\beta = 0^\circ$)

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