

Variateur de vitesse

Vacon NXL / NXS

Installation
Fonctionnement
Mise en service
Maintenance

Instalación
Funcionamiento
Puesta en marcha
Mantenimiento

Installation
Operation
Commissioning
Maintenance

Installazione
Funzionamento
Avviamento
Manutenzione

Montage-
Betriebs-und
Wartungs-
Anweisung


Монтаж
Функционирование
Ввод в эксплуатацию
Техническое обслуживание





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VACON NXL/NXS QUICK REFERENCE GUIDE



A T T E N T I O N


HAUTE TENSION ! Voir manuel utilisateur chap.1

HIGH VOLTAGE! See chapter 1 of user's manual

HOCHSPANNUNG ! Seihe Betriebsanleitung kap.1

ALTA TENSION ! Ver el capitulo.1 del manual

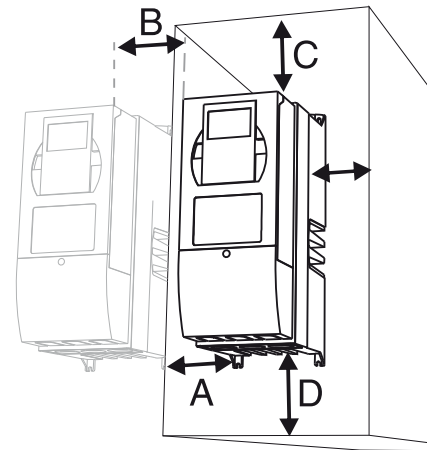
ALTAT TENSIONE ! Vedi manuale base capitolo 1



The user's manual is supplied with the VFDs.

Cooling

- A = Clearance around converter
- B = Clearance between two converters
- C = Clearance above converter
- D = Clearance beneath converter

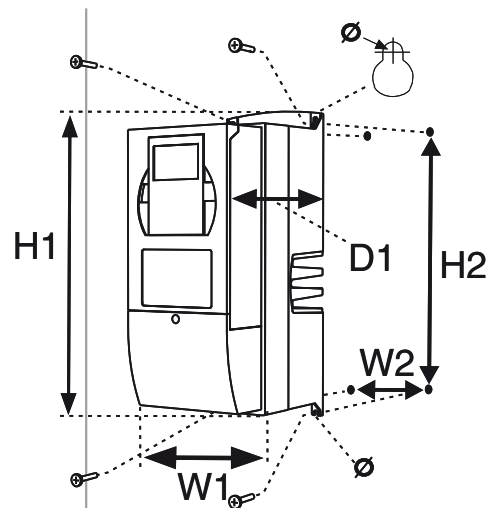


Dimensions (mm)					
NXL-NXS	NXL designation by Ciat	A	B	C	D
0003-00125 5 MF4	035 to 125	20	20	100	50
0016-0031 5 MF5	165 to 315	20	20	120	60
0038-0061 5 MF6	385 to 615	30	20	160	80
0072-0105 5 FR7	725 to 1055	80	80	300	100
0140-0205 5 FR8	1405 to 2055	80	80	300	200

Assembly

Unit dimensions (mm)					
NXL-NXS	NXL designation by Ciat	H1	W1	D1	Weight
0003-0012 5 MF4	035 to 125	327	128	190	5
0016-0031 5 MF5	165 to 315	419	144	214	8.1
0038-0061 5 MF6	385 to 615	558	195	237	18.5
0072-0105 5 FR7	725 to 1055	630	237	257	35
0140-0205 5 FR8	1405 to 2055	759	289	334	58

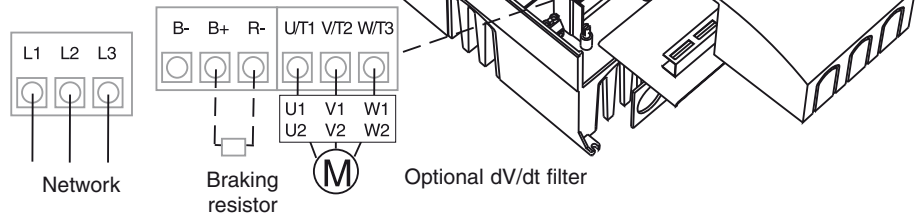
Assembly dimensions (mm)				
NXL-NXS	NXL designation by Ciat	H2	W2	Ø
0003-0012 5 MF4	035 to 125	313	100	7
0016-0031 5 MF5	165 to 315	406	100	7
0038-0061 5 MF6	385 to 615	541	148	9
0072-0105 5 FR7	725 to 1055	614	190	9
0140-0205 5 FR8	1405 to 2055	732	255	9



Power connections

Maximum cable length at the frequency converter output (NXL or NXS).

NXL-NXS	Length (M)	
	CTA	Drycoolers and Condensers
0003-0012 5 MF4	50	15 (60 with DU/DT filter)
0016-0031 5 MF5	150	80
0038-0061 5 MF6	150	80
0072-0105 5 FR7	150	80
0140-0205 5 FR8	150	80



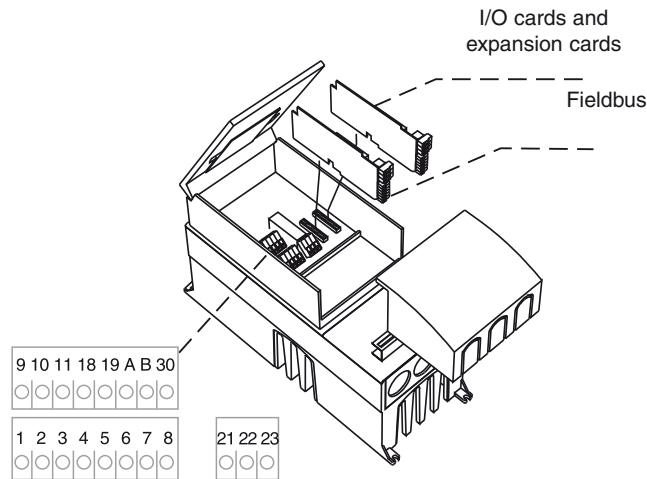
If several motors are installed at the frequency converter output, please add up all the cable lengths (for example: 2 motors with 20m of cable equals a total length of 40m).

Type of motor cable recommended for the EMC standard:

you must use cables which provide a minimum heat resistance of +70°C. Compact low impedance shielded symmetrical power cable for a specific network voltage (model NKCABLES/MCMK, SAB/ÖZCUY-J or similar recommended).

Grounding must be carried out 360° around the cable, both at the motor end and at the end on the frequency converter side, for compliance with the standard."

Control connections

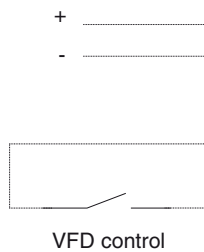


Standard wiring without sensor

0/10 V signal - 0/100% speed

AeroConnect terminal block J9 terminal 1

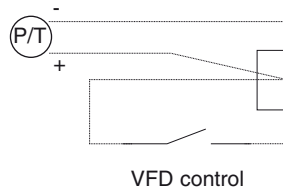
AeroConnect terminal block J9 terminal 2



Terminal	Signal	
1	10 V Reference voltage output	
2	AI1+	
3	AI1-	
4	AI2+	
5	AI2-	
6	24 V Ctrl voltage output	
7	GND I/O earth	
8	DIN1 Run command	
9	DIN2	
10	DIN3	
11	GND I/O earth	
18	AO1+	
19	AO1-	
RO1	Relay output 1	
22		RO1
23		RO1

Wiring: version 1 with sensor

Measurement sensor
Pressure/Temperature
4-20 mA, 2 wires

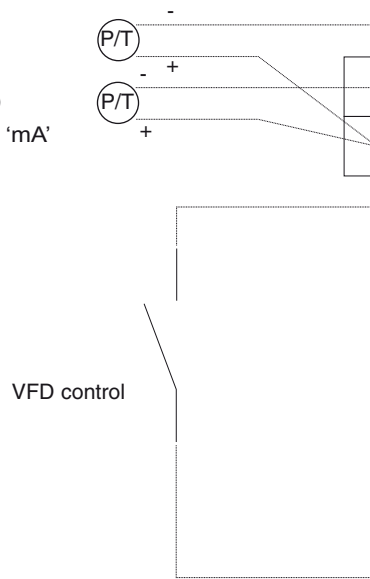


Terminal		Signal
1	10 V	Reference voltage output
2	AI1+	0-10 V analogue input
3	AI1-	(V/I sel. see jumpers X8/NXL, X1/NXS)
4	AI2+	0...4-20 mA analogue input (V/I sel. see jumpers X13/NXL, X2/NXS)
5	AI2-	
6	24 V	Ctrl voltage output
7	GND	I/O earth
8	DIN1	Run command
9	DIN2	
10		
11	GND	I/O earth
18	AO1+	0...4-20 mA analogue output
19	AO1-	
21	RO1	 Relay output 1
22	RO1	
23	RO1	

Wiring: version 2 with sensor

Measurement sensors
Pressure/Temperature
4-20 mA, 2 wires

Jumpers X8/NXL (X1/NXS)
Change from position 'V' to 'mA'



Terminal		Signal
1	10 V	Reference voltage output
2	AI1+	0...4-20 mA analogue input (Jumpers X8/NXL, X1/NXS)
3	AI1-	
4	AI2+	0...4-20 mA analogue input (V/I sel. see jumpers X13/NXL, X2/NXS)
5	AI2-	
6	24 V	Ctrl voltage output
7	GND	I/O earth
8	DIN1	Run command
9	DIN2	
10	DIN3	
11	GND	I/O earth
18	AO1+	0...4-20 mA analogue output
19	AO1-	
21	RO1	 Relay output 1
22	RO1	
23	RO1	

NXL	NXS		(NXL: terminal block on OPT-AA)
1		+24V	Ctrl voltage output
2	13	GND	
3	14	DIE1	
4	15	DIE2	
5	16	DIE3	
6	20	DO1	
21	24	RO2	 Relay output 1
22	25	RO2	
23	26	RO2	

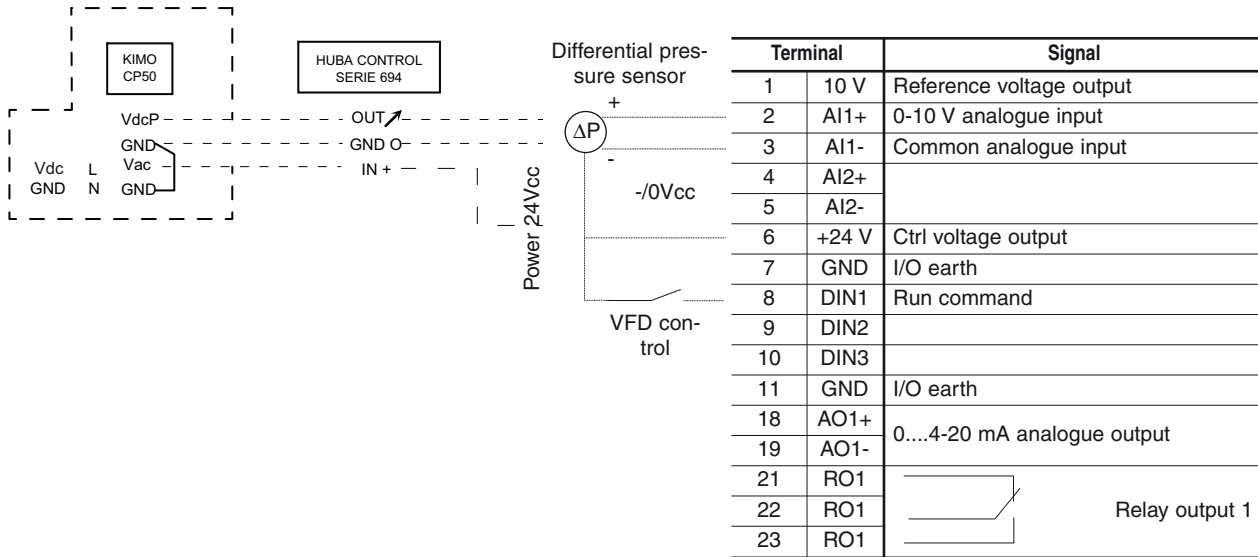
Wiring: two fixed PID control setpoints

Wire setpoint selection contact PI to terminals 6 (+24 V DC) and 10 (DIN3).

Set P2.1.18 to '12' (SEL REF2 PID).

P3.5 is used when the contact is open; P3.6 is used when the contact is closed.

Wiring: Differential pressure version

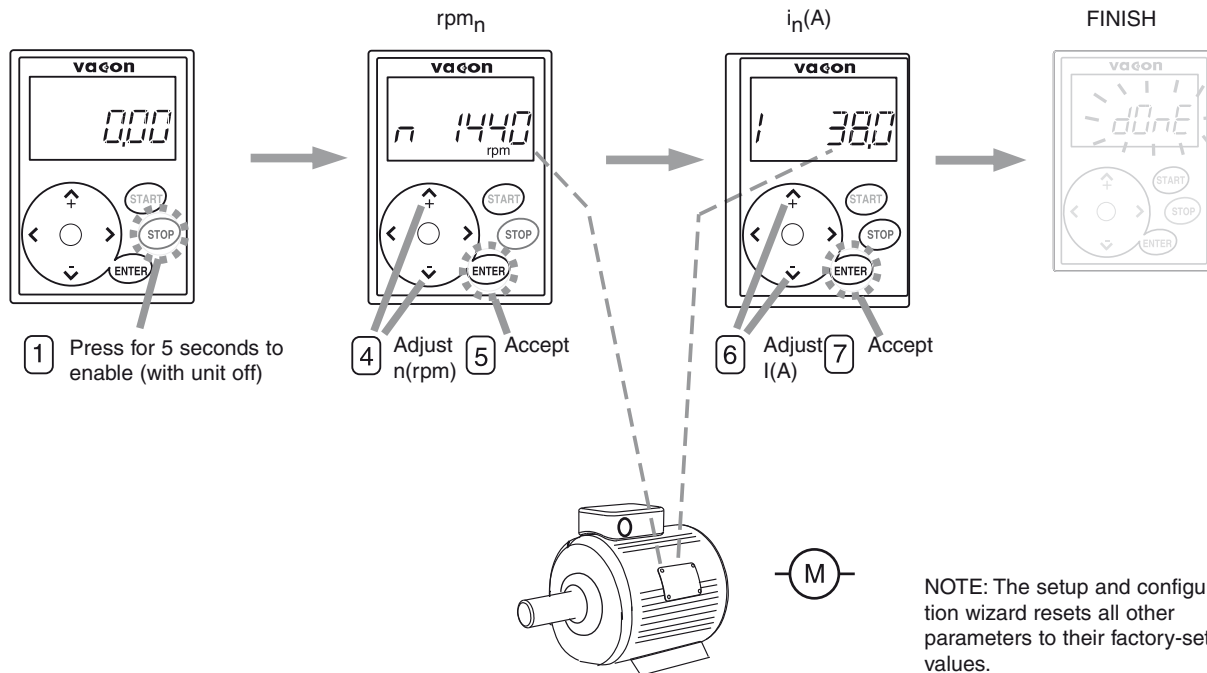


Wiring: thermal cut-out

If motor fitted with a thermal cut-out sensor, wire sensor between terminals 6 (+24 V) and 9 (DIN2).
 Set P2.1.17 to '5' (Ext. fault: NC) to confirm safety device.
 If a thermal cut-out fault occurs: code 51 (external fault)

Setup and configuration wizard

= Press the button



NXS : The setup and configuration wizard runs automatically when turned on for first time.
 To access the setup and configuration wizard at any time thereafter, press STOP for 5 seconds, turn off the VFD then turn it back on.

Parameters	Adjustment range	Settings				
		no sensors	1 sensor	2 sensors	Diff. pressure	User setting
Installed equipment specifications						
P2.1.8 Rated motor speed	300...20,000 rpm	Speed on data plate	Speed on data plate	Speed on data plate	Speed on data plate	
P2.1.9 Rated motor current	0.0...210.0 A	Voltage on data plate x No. of motors	Voltage on data plate x No. of motors	Voltage on data plate x No. of motors	Voltage on data plate	
P2.1.1 Minimum frequency	0.00...320.00 Hz	20	20	20	As needed	
P2.1.2 Maximum frequency	0.00...320.00 Hz	50	50	50	As needed	
P2.1.15 Analogue input scale (type of sensor fitted)	1=0/20 mA	3 (0/10 V)	2 (4/20 mA)	2 (4/20 mA)	3 (0/10 V)	
	2=4/20 mA					
	3=0/10 V					
	4=2/10 V					
	5=0/5 V					
	6=0.5 V / 4.5 V					
P2.9.20 Unit on display (on NXS only)	0=.	0	1 (°C) or 3 (bar)	1 (°C) or 3 (bar)	5 (m³/h)	
	1=°C					
	2=Pa					
	3=bar					
	4=M					
P2.9.7 Min. measurement 1 (sensor measurement value for min. V/I electric signal)	-32,000...32,000	NOT APPLICABLE	Min. sensor data plate value (b/°C)	Min. sensor data plate value (b/°C)	Min. sensor data plate value (Pa)	
P2.9.8 Max. measurement 1 (sensor measurement value for max. V/I electric signal)	0... 19,000	NOT APPLICABLE	Max. sensor data plate value (b/°C)	Max. sensor data plate value (b/°C)	Max. sensor data plate value (Pa)	
Operating specifications						
P2.1.23 Mode	0 = Standard, without sensor (frequency control)	0 (no sensors)	1 (1 sensor)	2 (2 sensors)	3 (Diff. pressure.)	
	1 = 1 sensor (reversed PID control)					
	2 = 2 sensors (reversed PID control)					
	3 = Diff. pressure (flow PID control)					
P2.9.16 Min. Process Setpoint	0...65,535	NOT APPLICABLE	Min. control value (b/°C)	Min. control value (b/°C)	Min. control value (m3/h)	
P2.9.17 Max. Process Setpoint	0...65,535	NOT APPLICABLE	Max. control value (b/°C)	Max. control value (b/°C)	Max. control value (m3/h)	
P2.9.15 K factor	0 (disabled) 1...2,200	0 (not used)	0 (not used)	0 (not used)	K value	
P3.5 Reference PID (fixed control setpoint)	0...65,535	NOT APPLICABLE	As needed	As needed	As needed	
Redo adjustment? (on NXS only)	< No Yes >	<	<	<	<	
Adjustment made (on NXS only)		enter	enter	enter	enter	
New panel (on NXS only)		enter	enter	enter	enter	
"Copy parameters (in operator panel)" (on NXS only)	< No Yes >	>	>	>	>	
Load panel? (on NXS only)	< No Yes >	>	>	>	>	
Unit -> Panel (on NXS only)	Wait approx. 30 s					
End of configuration wizard		Done	Done	Done	Done	



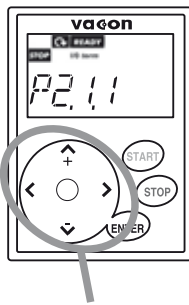
Differential pressure: K factor values vary according to fan size (see table below):

Size	180	200	225	250	280	315	355	400	450
TE K factor	23	30	38	47	59	75	95	123	158

Size	315	355		450	500	560	630	710	800	900	1000	1120
NPL K factor	78	100	134	178	218	268	349	455	566	700	859	1074

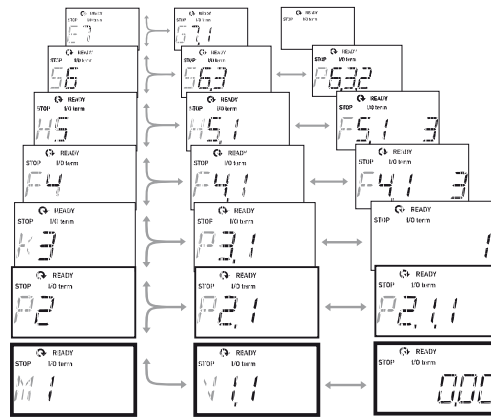
Size	315	355	400	450	500	560	630	710	800	900	1000	1120
NPE K factor	76	95	124	156	188	240	296	400	514	652	772	1120
PEAF K factor	109	138	175	222	274	344	435	553	700	888	1096	1375

EN



Movement button

- Expansion board menu
- System menu
- Fault history menu
- Current faults menu
- Panel control menu
- Parameters menu
- Display menu



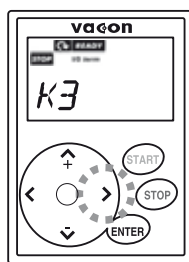
M1 display menu

Code	Signal name	Unit
V1.1	Motor frequency	Hz
V1.2	Frequency reference	Hz
V1.3	Motor speed	rpm
V1.4	Motor current	A
V1.5	Motor torque	%
V1.6	Motor power	%
V1.7	Motor voltage	V
V1.8	Bus DC voltage	V
V1.9	Temperature	°C
V1.10	Analogue input 1	mA or V as config.
V1.11	Analogue input 2	mA or V as config.
V1.12	Current on analogue output	mA
V1.13	Current on analogue output 1, expansion card	mA
V1.14	Current on analogue output 2, expansion card	mA
V1.15	DIN1, DIN2, DIN3	
V1.16	DIE1, DIE2, DIE3	

Code	Signal name	Unit
V1.17	R01	
V1.18	ROE1, ROE2, ROE3	
V1.19	DOE1	
V1.20	PID: reference	dep. on selection
V1.21	PID: feedback	dep. on selection
V1.22	PID: error	%
V1.23	PID: output	%
V1.24	Switching 1, 2, 3	
P1.25	0 = Standard, without sensor (frequency control)	
	1 = 1 sensor (reversed PID control)	
	2 = 2 sensors (reversed PID control)	
	3 = Diff. pressure (flow PID control)	

The control value (Pressure/Temperature/Flow depending on the above settings) can be displayed using VFD display code V1.21 (value can be displayed automatically at power-up by setting S6.6.1 to '1.21' (NXS : 1.26.1)). The VFD fan can be shut down and set to operate automatically based on need by setting P6.7.2 to '1' (NXS : CALC TEMP).

K3 panel control menu



Parameters	Selection
P3.1 Ctrl source selection	1 = I/O terminal block 2 = Panel 3 = Fieldbus
P3.2 Panel reference	(Hz)
P3.3 Panel direction of rotation	0=Forward 1=Backward
P3.4 Off button enabled	0 = Limited operation 1 = Always running
P3.5 PID: reference 1	As needed
P3.6 PID: reference 2	As needed

Fault codes

CODE	FAULT
1	Overcurrent
2	Voltage surge
3	Earthing fault
8	System fault
9	Undervoltage
11	Monitoring of output phases
13	Converter under-temperature
14	Converter over-temperature
15	Motor stalled
16	Motor overtemperature
17	Motor underload
22	EEPROM checksum error
24	Counter fault
25	Microprocessor watchdog fault
29	Thermistor fault
34	Internal bus communication
35	Application fault
39	Unit removed
40	Unit unknown
41	Main low-voltage switch overtemperature
44	Unit changed
45	Unit added
50	Ana. input: input current < 4 mA (signal range: 4-20 mA)
51	External fault
52	Communication with panel fault
53	Communication bus fault
54	Slot fault
55	PID feedback monitoring

Differential pressure transmitter KIMO CP50

■ Connectique

(e) Connexion to PC via LCC 100 software

(f) Autozero

(g) Pressure connection (barbed fittings shown)

(h) Cable grip

(i) DIP switches

(j) output terminal block

(k) Power supply terminal block

0-10V output

(a) $\begin{matrix} \text{ⓐ} \\ \text{ⓑ} \\ \text{ⓒ} \end{matrix}$ GNDground
Vdc P.....direct voltage (pressure)

OR

4-20 mA output

(a) $\begin{matrix} \text{ⓐ} \\ \text{ⓑ} \\ \text{ⓒ} \end{matrix}$ Idc Pdirect current (pressure)
GNDground

Direct voltage power supply

(b) $\begin{matrix} \text{ⓑ} \\ \text{ⓒ} \end{matrix}$ Vdcdirect voltage
GND ground

OR

Alternative voltage power supply

(b) $\begin{matrix} \text{ⓑ} \\ \text{ⓒ} \end{matrix}$ Vac.....alternative voltage (phase)
Vac.....alternative voltage (neutral)

(c) Cable grip : to insert the cable, it is required to slightly cut the rubber.

Autozero

To make an autozero, please disconnect the 2 pressure connections and press on the push-button ---->



Configuration by DIP switch

It is possible to configure the measuring ranges, the units, the output of the instrument by switch (on drawing "connection"). To configure the instrument, please unscrew the 2 screws from the housing, and then open it.



To configure the transmitter, it must not be energized. Then, you can make the settings required, with the DIP switches (as show on the drawing beside). When the transmitter is configured, you can power it up.

Electronic board

(d) DIP switch

Identification of the DIP switches on the electronic board

output Units setting

Switch 1

1 2 3 4

On-off switch

Switch 2

1 2 3 4

Measuring range setting

Standard range setting (central zero)



Caution!

Please follow carefully the combinations beside with the DIP switch. If the combination is wrongly done, the following message will appear on the display of the transmitter "CONF ERROR". In that case, you will have to unplug the transmitter, place the DIP switches correctly and then, power the transmitter up.

Output setting DIP Switch 1.....

To set the type of analogic output, please put the on-off switch of the output as shown beside.

Configurations	4-20 mA				0-10 V			
Combinations								
	1	2	3	4	1	2	3	4

Units setting DIP Switch 1.....

To set the measuring unit, put the on-off switches 2,3 and 4 of units as shown beside.

Configurations	Pa				mm H ₂ O				mbar				inWG				mmHG			
Combinations																				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Measuring range setting DIP Switch 2.....

To set the measuring range, put the on-off switches 1, 2 and 3 of the measuring range as shown beside.

Example : 0 ----> +7500 Pa, the measuring range is 7500 Pa
 - 500 Pa ----> +500 Pa, the measuring range is 1000 Pa

Combinations \ Units	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4									
	Pa																								
mm H ₂ O	1000	2500	5000	7500	10000	100	250	500	750	1000	10	25	50	75	100	4	10	20	30	40	7,5	20	40	60	75

Standard range / central zero setting Switch 2

To set the type of range, put the on-off switch 4 as shown beside:

Example : standard / 0 (0/1000 Pa)
 central zero (-500 Pa / 0 / + 500 Pa)

Configurations	Full scale				Central zero			
Combinations								
	1	2	3	4	1	2	3	4