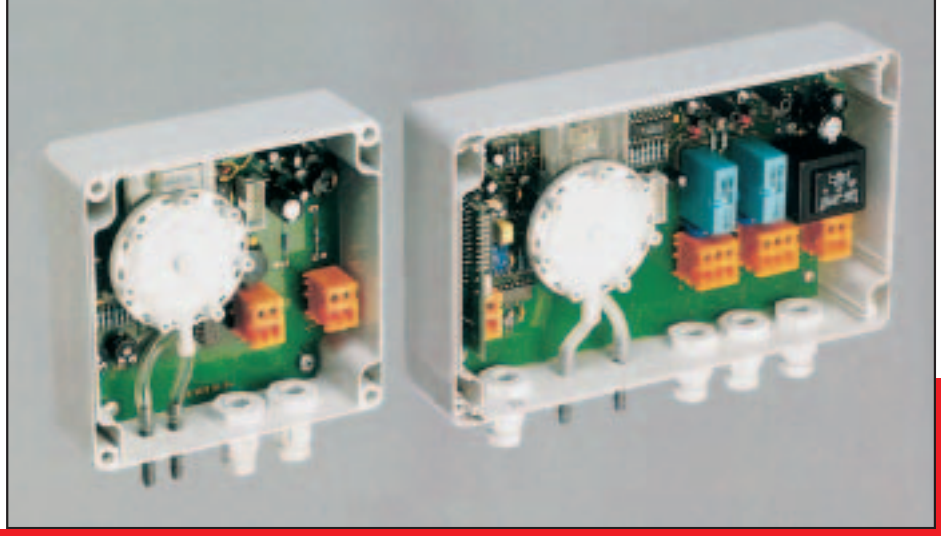
698

Pressure, vacuum and differential pressure module with or without display 0 – 1/3/5/10/30/50 mbar

EDITION 07/2001

Huba Control

FOR FINE PRESSURE AND FLOW MEASUREMENT



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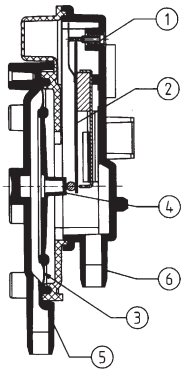
Technical overview

The type 698 series of differential pressure modules is especially suitable for monitoring air flow and differential pressure in air conditioning systems.

The versions with and without limit switches are supplied in casings of different sizes. The modules are available with or without a circuit for square root extraction.

One of three standadized analog output signals can be factory-set or selected by the user.

The built-in differential pressure transmitter, with its unique ceramic fulcrum lever technology (see cross-sectional drawing) is a device in the Huba type 696/697 series.



The distinct advantages

-
- Rugged measured value detector, owing to outstanding synergy obtained by combining diaphragm technology with a ceramic element
- High overpressure safety margin, even in the lowest pressure range
- Easy to install and commission
- No maintenance required

Legend to cross-section drawing

1 Electrical connection
2 Ceramic fulcrum lever with electronic circuitry
3 Silicon diaphragm
4 Diaphragm plate with connecting rod
5 Connection branch P1 higher pressure/lower vacuum
6 Connection branch P2 lower pressure/higher vacuum

Medium

Neutral gases, air

Pressure ranges

Pressure stages see order code selection table. Other pressure ranges on request.

Admissible overpressure

up to 200 mbar

Rupture pressure

500 mbar

Case construction

Case: ABS self-extingsuishing
Sensor element: Polycarbonate PC

Diaphragm

Silicon polymer (LSR)

Temperature influences

Medium temperature	0 – 70 °C
Ambient temperature	0 – 50 °C

TC sensitivity and TC zero point see parameter table.

Storage temperature
-10 °C … +70 °C

Dynamic response

Response time:
< 10 msec

Load cycle:
< 10 Hz

Display

Liquid-crystal, 3 1/2 digit, character height 12 mm
Unit see order code selection table.
Status display for limit value 1 with symbol ^
Status display for limit value 2 with symbol ~
Display accuracy:
Error at 23 °C ambient temperature ≤ +/- 0.3% fs

Weight

Max. 650 g, depending on version

Installation arrangement

Vertical with connections facing downward, or horizontal with cover facing upward.
See order code selection table (adjustment position). If the orientation is subsequently changed, the zero point can be adjusted via a potentiometer.

Pressure connections

Hose connection branch conical, diameter 4 to 7 mm

to the left P1 =	higher pressure / lower vacuum
to the right P2 =	lower pressure / higher vacuum

Outputs and power supply

Power supply:	230 VAC +10% / -15%	
Outputs:	0 – 10 V	0 – 20 mA 4 – 20 mA
selectable via jumper connection		
Power supply:	24 VDC/AC +10% / -15%	
Outputs:	0 – 10 V	0 – 20 mA 4 – 20 mA
selectable via jumper connection		

Square root extraction

Two versions available, depending on application:
– Digital circuit with error ≤ 1%
– Simple diode circuit with error ≤ 6%

Potentiometer for user-adjustment of display in %.

Load

Voltage output	≥ 2 kOhm
Current output	≤ 500 Ohm

Protection class

without display	IP 54
with display	IP 42

Power consumption

approx. 2 VA

Electrical connections

Internal screw terminals, diameter 1.5 mm
PG 9 screw fittings

A – Modul with limit values

B – Modul without limit values

C – Cover with display panel

D – Circuitry for square root extraction

Versions

Parameter	Unit	0 – 1 mbar typ.	0 – 1 mbar max.	0 – 3 mbar typ.	0 – 3 mbar max.	0 – 5 mbar typ.	0 – 5 mbar max.	0 – 10 mbar typ.	0 – 10 mbar max.	0 – 30 mbar typ.	0 – 30 mbar max.	0 – 50 mbar typ.	0 – 50 mbar max.
Linearity	% fs	+/-0.5	+/-1-5	+/-0.3	+/-0.5	+/-0.3	+/-0.5	+/-0.2	+/-0.3	+/-0.2	+/-0.3	+/-0.2	+/-0.3
Hysteresis	%fs	0.5	+/-1.5	0.2	+/-0.5	0.2	+/-0.4	0.2	+/-0.3	0.1	+/-0.2	0.1	+/-0.2
Long terme stability[1] (zero point)	% fs	0.5		0.5		0.5		0.5		0.5		0.5	
TC zero point	% fs/°C	+/-0.04	+/-0.12	+/-0.02	+/-0.04	+/-0.02	+/-0.04	+/-0.02	+/-0.04	+/-0.02	+/-0.04	+/-0.02	+/-0.04
TC sensitivity	% fs/°C	+/-0.04	+/-0.12	+/-0.02	+/-0.04	+/-0.02	+/-0.04	+/-0.02	+/-0.04	+/-0.02	+/-0.04	+/-0.02	+/-0.04

[1] Long-term stability in % fs over 1 year
Pressure ranges +/- on request

Test conditions: 25 °C, 45 % rh
TC zero point/TC sensitivity 0 – 70 ° C

Order code selection table

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		698 .	9	X	X	X	X	X	X	X	X
Version without limit values			9	0							
Version with limit values			9	1							
Pressure range (mbar)[2]	0 – 1				0						
	0 – 3				1						
	0 – 5				2						
	0 – 10				3						
	0 – 30				4						
	0 – 50				5						
Power supply	24 VAC / DC					0					
	230 V					1					
Signal output	0 – 10 V						0				
	0 – 20 mA						1				
	4 – 20 mA						2				
Square root extraction	None							0			
	Diode circuit							1			
	Digital circuit							2			
3 1/2 digit display	None								0		
	mbar								1		
	Pa[3]								2		
	kPa[4]								3		
	InchH_2O								4		
	% (diode circuit)							1	5		
	% (digital circuit)							2	5		
Installation arrangement[5]	Horizontal									0	
	Vertical									1	
Pressure unit on label	mbar										0
	Pa										1
	kPa										2
	InchH_2O										3

[2] Other pressure ranges on request.
[3] Only for pressures in ranges 0 – 1, 0 – 3, 0 – 5, 0 – 10 mbar
[4] Only for pressures in ranges 0 – 30, 0 – 50 mbar
[5] Zero point can be readjusted by the user if orientation is changed from horizontal to vertical or vice versa.

Limit switches

2 volt-free change-over contacts adjustable over the full range.

Limit value adjustment:
Separate potentiometer inside case for each value.

Limit value display:
Monostable element for display in the selected pressure unit on digital display panel or via digital voltmeter..

Limit value status in indication:
Red LEDs (one each) inside case and ^/ ~ symbols on display panel.

Switching hysteresis 1% fs fixed.

Contact rating

250 VAC / 6 A

Dimensions in mm / electrical connections

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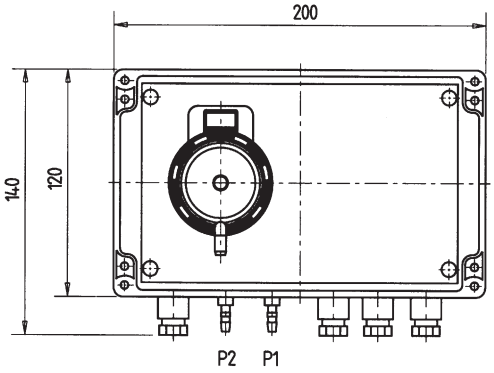
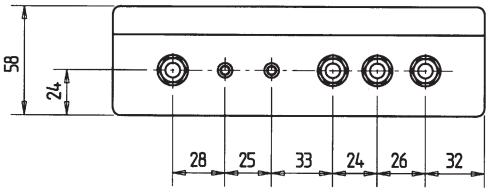
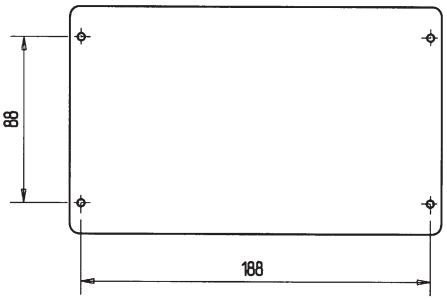
With limit values

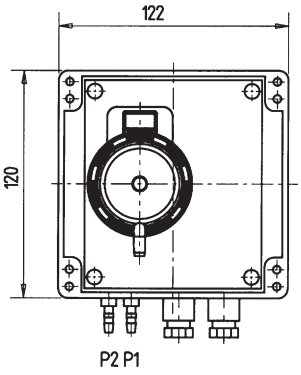


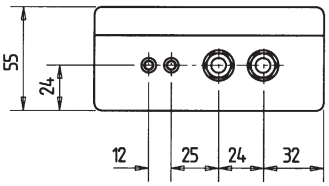


Hole pattern for wall fixing



698.90XXXXXX
Without limit values





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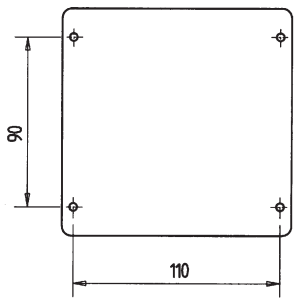
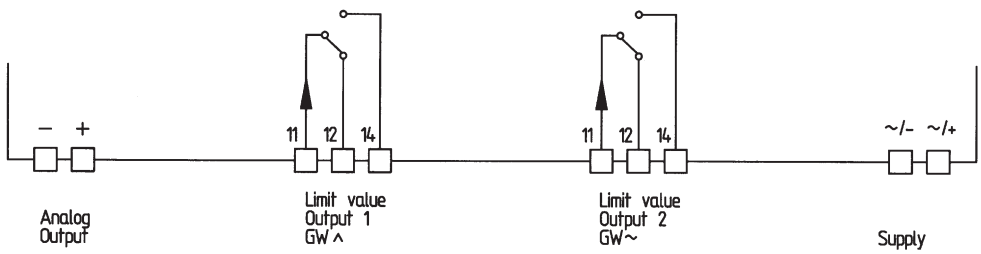


Connection diagram



Caution:

With an 24 VAC/DC supply, the inputs and outputs are not isolated.
With an AC supply voltage, inputs and outputs must not be connected to ground.

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