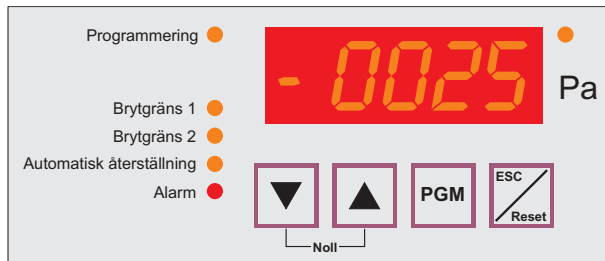


### Pressure switch for positive, negative or differential pressure

### MTV-2000

Doc.No: Mi-230gb / 2009-09-11



#### USE.

MTV-2000 is a pressure switch designed to monitor positive, negative or differential pressure in combustion plants and air handling systems.

#### FUNCTION

MTV-2000 gives an alarm when the pressure exceeds or falls below a set warning or stop limit during a set time. The alarm for the warning limit is given in the form of the "Alarm" LED coming on. The alarm for the stop limit is given in the form of both relays "Safety circuit" and "Alarm circuit" switching so the connections between terminals 4 and 5 as well as between terminals 7 and 8 break. At the same time the connections between terminals 5 and 6 respectively 8 and 9 make. The "Alarm" LED and the display both flash. The alarm is reset manually, but this can also be done automatically. Normally warning limit and stop limit 1 are active, however, when a control signal (230 or 24 VAC) is fed to terminal 3 then warning and stop level 2 are activate.

The control signal must have the same phase as on terminal 1.

#### DESIGN

MTV-2000 is designed with three interconnected circuit boards, I/O board, measurement board and the display board. 4-digit indicator with sign for negative values and 6 LEDs for status indication. Readable and programmable from the outside.

ABS plastic case equipped with four threaded holes for cable glands. Two pressure outlets for HT-plastic tube 8/6 which can easily be removed for replacement with other couplings with male R1/8" thread.

Use a counter hold on the coupling closest to the case when assembling and dismantling the tubes or fittings.

#### INSTALLATION

MTV-2000 is mounted via 4 screws, max  $\varnothing 4$  mm. The location of the holes is shown back of the enclosure. Do not place the unit on a warm surface.

Connect power supply according to the electrical connection. Check that the controller is marked with

the correct power supply voltage. If using cable glands without a nut on the inside, glands with grommet must be used to avoid damage to the threads on the enclosure. Remember to remove the transparent protective cover from the front panel after finished installation.

#### PRESSURE CONNECTION

The pressure connection should be made with Micatrone's pulse line sets to ensure a tight and safe function.

MTV-2000 is available with three different measurement ranges which run through zero:

-300...+300 Pa, -3...+3 kPa and -7.5...+7.5 kPa.

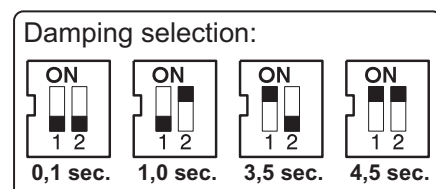
The pressure connections are intended for HT-plastic tube 8/6 mm and should be connected like this:

1. If MTV-2000 shall control a pressure that is compared to atmospheric pressure, the pressure connection should be made on the **+** socket (right-hand). This applies whether the pressure is positive or negative compared with the atmosphere. The **-** socket should remain open.
2. If MTV-2000 shall control a differential pressure, the lowest pressure compared with the atmospheric pressure is connected to the **-** socket (left-hand). The higher pressure should be connected to the **+** socket.

#### DAMPING

Superimposed "noise" frequently occurs when pressure measuring from e.g. burners, fans, etc. It is possible to set different damping (time constant) for the pressure sensor. On delivery MTV-2000 is set to 3.5 seconds attenuation.

1. Open the cover.
2. On the midmost circuit board is a 2-way miniature switch (DIL-switch) in the left-hand lower corner.
3. Set the required damping option in seconds as set out below.
4. Refit the cover.



damping of the pressure measurement

## PROGRAMMING

Hold down the **PGM** key for 3 seconds and the display will switch from the actual value to the first parameter P00 in the list of parameters. The list of parameters includes seven parameters, the first, P00, can not be changed.

Browse through the list of parameters by pressing the **▲▼** keys and this will display P00, P01, P02, P03, P04, P05 and P06.

Pressing the **PGM** key for the parameter in question shows the set value.

The set value is changed by pressing **PGM** after which the left-hand digit starts to flash. Use the **▲▼** keys to change digit and when the required digit is shown, press the **PGM** key. The next digit to the right will then start to flash and can be changed. Continue along the entire row to the right and press the **PGM** key. The unit responds by flashing the required value three times to acknowledge programming has been successful.

Negative values are entered by pressing the **▼**-key repeatedly when programming the left most digit displayed until the digit turns over from positive to negative numbers. Remaining digits are then programmed as described above until the entire parameter value is entered.

Ongoing programming can be cancelled before the last digit is completed by pressing the **ESC** key.

After programming a value you can return to the list of parameters by pressing the **ESC** key.

Par. nr.	Parameter list	Range	Preset value
P00	Programme version	XXX	
P01	Warning limit 1	*	0 Pa
P02	Stop limit 1	*	0 Pa
P03	Warning limit 2	*	0 Pa
P04	Stop limit 2	*	0 Pa
P05	Time delay all limits	0...60 sec.	15 sec.
P06	Warning- & stop limits	High = 1 Low = 0	1

\* = within measuring range

The "Programming" LED lights during programming. Indication of the actual pressure is restored by pressing the **ESC** key, after which the "Programming" LED goes out and the Pa LED comes on. If the unit is left in "Programming" mode and no key is pressed for 5 minutes, MTV-2000 automatically returns to display actual pressure.

### Warning limits

When the warning limits (P01 or P03) are exceeded or fallen below for greater than the set time (P05) the "Alarm" LED comes on.

### Stop limits

When the stop limits (P02 or P04) are exceeded or fallen below for more than the set time (P05) the "Alarm" LED flashes at the same time as both alarm relays switch (release).

### Resetting

Warnings and alarms can be reset as soon as the pressure returns to normal. The "automatic resetting" LED is lit as long as resetting is active. Resetting can be performed in one of the following ways:

- Manual resetting  
Press the ESC/RESET key or via a temporary make contact between terminals 13 and 14 for more than 3 seconds.
- Automatic resetting  
Connect terminals 13 and 14 electrically via an external make contact or fit a jumper. If there is a make state the unit returns to normal display mode as soon as the pressure returns to normal.

### Switching warning and stop limits

When a phase (same phase as on terminal 1) is connected to terminal 3 then warning limit 2 (P03) and stop limit 2 (P04) apply. Without phase on terminal 3 warning limit 1 (P01) and stop limit 1 (P02) apply. This method permits, e.g. a stepped burner to use different limits for step 1 and step 2..

### Power failure

If power failure occurs after the warning or stop limit has tripped, automatic resetting does not take place when the power returns

### ADJUSTING OF THE ZERO POINT

#### NOTE! Loosen pressure tubes to the unit.

Press down the **▲▼** keys simultaneously and keep these pressed down until the display has gone out, release the keys and the display will show " - - - - " during zero point adjustment.

The display shows " 0000 " when zero point adjustment is complete.

Adjusting the zero point should be carried out when the unit has reached its normal ambient temperature and been operational for about 60 minutes, and then twice a year.

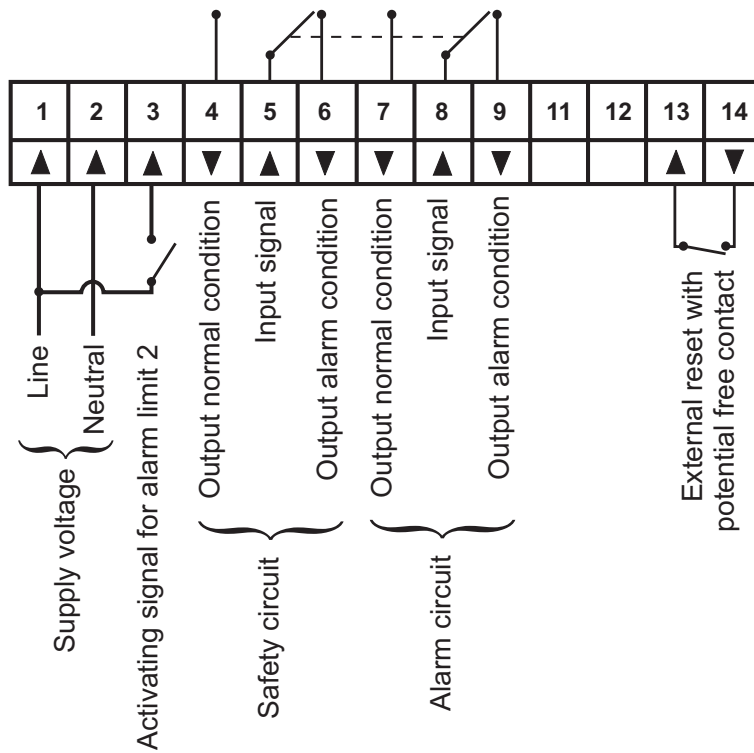
## TECHNICAL DATA

Supply voltage:	See label on the outside of the enclosure (24/230 VAC +/-10%) (50/60Hz).
Power consumption:	7.5 VA
Activating signal for alarm limit 2:	24 or 230 VAC (Same phase as terminal 1)
Ambient temperature:	0...55 °C
Measuring range:	See label on the outside of the enclosure. (-300...+300 Pa) (-3000...+3000 Pa) (-7500...+7500 Pa)
Measurement error:	$\leq \pm 1 \% \text{ FS}$
Set point range:	0...100% of the measuring range.
Max pressure load:	25 kPa
Adjustable time delay:	0...60 Seconds
Output Relays:	2 pcs.
Max load on relays:	24/230 VAC, 2 A $\cos \varphi = 1$
Electrical terminals:	
- Supply voltage:	Max. 2x1,5 mm <sup>2</sup> wire
- Relays:	Max. 2x1,5 mm <sup>2</sup> wire
- External reset:	Max. 1x1,5 mm <sup>2</sup> wire
Cable entries:	2 pcs M16 + 2 pcs M20
Degree of protection:	IP 65
Pressure connections:	8/6 HT plastic tube
Dimensions [HxWxD]:	120 x 200 x 57 mm (excl. pressure connections)
Weight:	0,75 kg

## Maintenance

Adjusting the zero-point twice a year is recommended.

## ELECTRICAL CONNECTION



### Electrical connection

The relays are shown in an unpowered state, i.e. alarm position. Both relays switch simultaneously