Micaflex FD ver 4
Differential pressure and flow transmitter with microcontroller and digital indication

MF-FD ver 4

NOTE !
Read through the entire manual before you begin installation and programming.

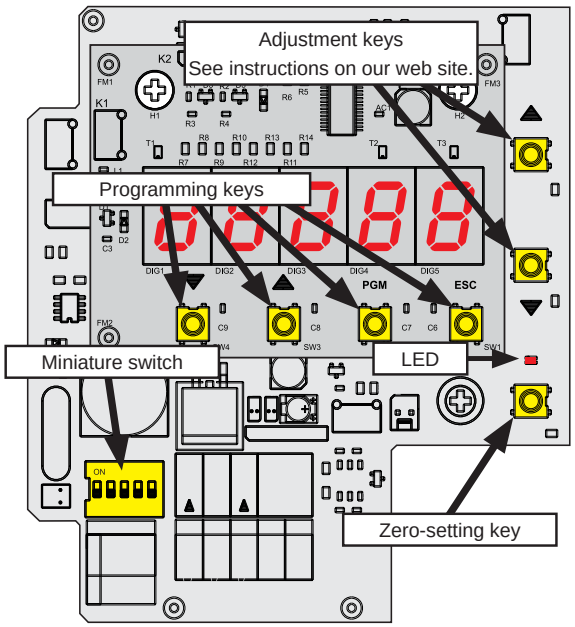
APPLICATION
MF-FD is a pressure transmitter designed for flow measuring.

MOUNTING
MF-FD is designed for wall mounting but can be fitted with an optional frame kit, MFM-PANEL, for recessed mounting in a wall or through a cabinet door.

MF-FD is screwed to the wall using four screws, max ø 4mm. Location of screw holes are shown on the reverse of the enclosure.

PRESSURE CONNECTIONS
Pressure connection to measuring device is done with HT-plastic tube 8/6 mm.

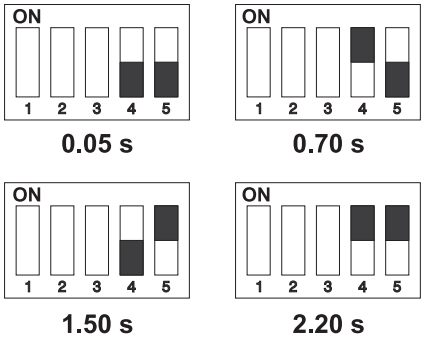
Pressure connections **[+]** and **[-]** are connected to the flow measuring device according to its guidelines.



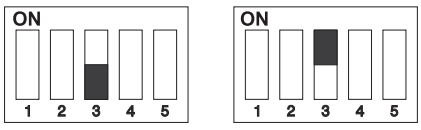
ZERO ADJUSTMENT
Switch on the main supply and wait at least 60 sec. Set the manifold valve in position calibration (if there is no valve, loosen the pressure tubes from the MF-FD). Remove the cover to access the Zero-setting key on the main circuit board. Check that the miniature switch no 2 is in position ”OFF”. Press down the Zero-setting key, the LED starts flashing. Keep the key pressed until the LED turns off. Release the key and the zero-setting is finished.

OUTPUT SIGNAL SELECTION
Volt and mA signal have different wiring terminals. Verify that the correct output is connected.

SETTING OF DAMPING
MF-FD offers a possibility to set different damping (time constant). At delivery of MF-FD, the damping is set to 1,5 seconds damping. Setting is adjusted with the miniature switch no 4 and 5 (the switch is situated on the bottom left edge of the main circuit board).



FORCED OUTPUT SIGNAL
Max output signal (10 Volt and 20 mA) is obtained when miniature switch no 3 is set to position ”ON”. This function can be used to check the receiving system.



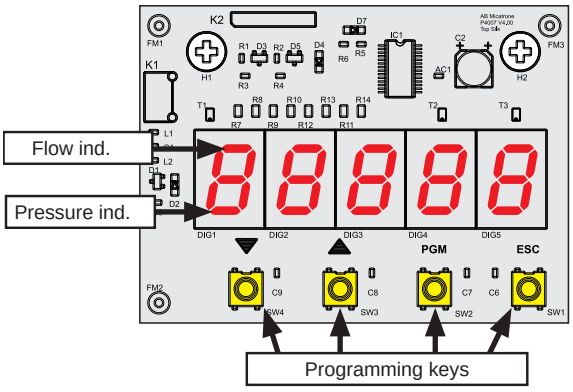
ADJUSTING THE MEASURING RANGE
The measuring range can be adjusted to correct a measuring deviation. Instruction can be found on our website, www.micatrone.com.

DISPLAY UNIT

MF-FD is fitted with a 4-digit LED display and LED's for flow or pressure indication.

Shifting between flow or pressure indication is done with the arrow-keys on the display circuit board. This function does not affect the selected output signal, only the indication of measured flow or pressure.

Programming of all parameters is done by four keys on the display circuit board.



PROGRAMMING

MF-FD is programmable and include following parameters that can be programmed:

No	Description	Min	Max	Preset
P01	Alarm limit [Flow]	0000	*[P05]*	0000
P02	Time delay [seconds]	000	600	000
P03	Alarm function oFF = Off Hi = High alarm Lo = Low alarm	oFF	Lo	oFF
P05	Flow indication at max. pressure	0000	9999	0000
P06	Number of decimals for flow indication	0	3	0
P07	Selection of output P = Pressure linear F = Flow linear	P	F	F

Keep the **PGM** key pressed until **P** is shown in display. Use the arrow-keys to select the parameter to change. Press the **PGM** key to access the selected parameter.

P01, P02, P05 & P06:

To change the value of the parameter, press the **PGM** key again. The first digit will begin to flash, indicating that the digit can be changed. Adjust the value of the digit by pressing the arrow-keys. Confirm each digit by pressing the **PGM** key. When the last digit is programmed and confirmed with the **PGM** key, all digits will flash fast and then turn to show the parameter.

P03 & P07:

To change the value of the parameter, press the **PGM** key again. The display will begin to flash, indicating that the value can be changed. Adjust the value by pressing the arrow-keys. Confirm by pressing the **PGM** key. The display will flash fast and then turn to show the parameter.

Press the **ESC** key to return to normal indication of actual flow or pressure.

After 5 minutes, with no key has been used, the programming is terminated automatically.

ALARM

MF-FD include a visual alarm indicated by a flashing display on alarm state, if this function is activated. By using an optional plug-in module, a potentialfree changing relay output can be obtained.

P01, Alarm limit [Flow]

Parameter for the flow at which the alarm will be triggered. Number of decimals determined in P06.

Example 1:
P01 = 024.0 l/s
P02 = 010 s
P03 = Hi
Alarm is triggered when the flow is above 24 l/s (i.e. 24.5 l/s) for more than 10 seconds.

Example 2:
P01 = 05.00 m³/h
P02 = 060 s
P03 = Lo
Alarm is triggered when the flow is below 5 m³/h (i.e. 4.8 m³/h) for more than 60 seconds.

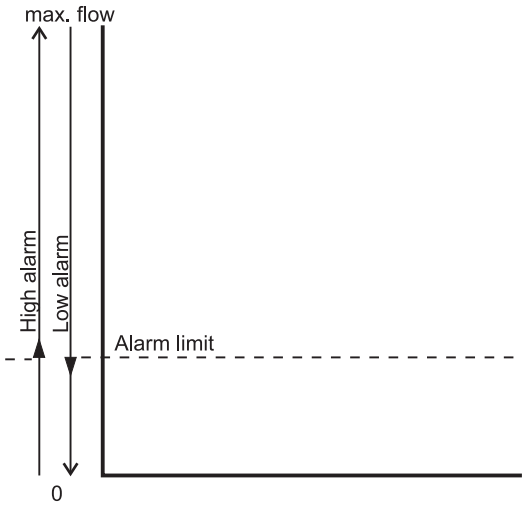
The alarm is reset automatically when alarm condition no longer exists.

P02, Time delay [seconds]

Parameter for setting the time delay in seconds before the alarm is triggered.

P03, Alarm function

Parameter to obtain alarm at increasing flow (High alarm), decreasing flow (Low alarm) or no alarm (Off).



FLOW INDICATION

Calculate the flow for max. pressure of the transmitter. The max. pressure is noted on the label situated on the right side of the enclosure.

Programming of the calculated flow at max. pressure is done in P05 with 4 digits [0000 ... 9999] and number of decimals in P06 with 1 digit [0 ... 3].

Example:
Max. pressure gives a flow of 10.50 m3/h.
Program the value 1050 in parameter P05
Program the value 2 i parameter P06
Check that P05 shows 10.50

TECHNICAL DATA

Supply voltage:	24 ± 15% VAC, 20...32 VDC 24, 115, 230 VAC (with transformer) 50/60 Hz
Power consumption:	Max 4 VA (24 VAC) Max 2 W (24 VDC) Max 8 VA (230 VAC)
Range:	0...50 Pa 0...100 Pa 0...200 Pa 0...500 Pa 0...1 kPa 0...2 kPa 0...5 kPa Other ranges on request.
Overload:	Max 50 kPa
Accuracy:	< ± 0,5 % of the full range plus ± 0,5 Pa
Temperature drift:	< ± 0,5 % /10 °C
Damping:	Selectable time constants of 0.05, 0.7, 1.5 and 2.2 s.
Output signal:	4...20 mA max R_L = 400 Ohm 0...10 Volt R_L = 0 Ohm Both mA and Volt signal can be used simultaneously. 0 ... 20 mA can be ordered. Inverted signal can be ordered.
Ambient temp.:	0...50°C
Degree of protec.:	IP 65, ABS plastic
El. connections, **- solid conductor:** **- stranded conductor:**	 1 x 2,5 mm² / terminal 1 x 1,5 mm² / terminal
Cable entries:	2 pcs threaded holes M16x1,5 (cable glands not included)
Pressure. conn.:	8/6 mm HT-plastic tube
Dimensions:	WxHxD = 122x120x90 mm
Weight:	0.60 kg

EMC/LVD/ROHS II

AB Micatrone declare under sole responsibility that MF-FD is in conformity with the essential requirements in the EMC-, the LVD- and the RoHS II directive. The full text of Manufacturers declaration of conformity is available on Micatrones website.

SERVICE

MF-FD normally needs no service, but we recommend to check the zero point once a year.

CLEANING

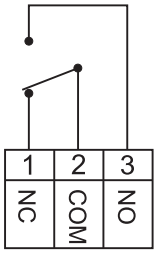
MF-FD should be cleaned with a soft cloth and a light detergent. Do not use scouring powder or solvent.

TRANSFORMER (OPTIONAL)

The output signal is normally not galvanically separated from the supply voltage. To obtain galvanic separation between the output signal and the supply voltage on a standard transmitter, the apparatus must be equipped with a plug-in transformer. Plug-in transformer can be obtained for 24, 115 or 230 VAC.

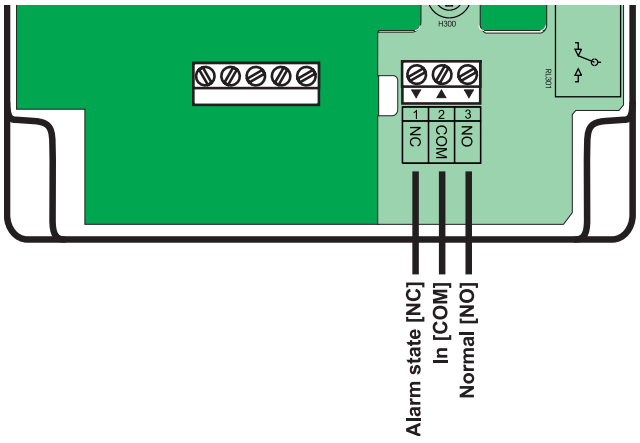
ALARM MODULE (OPTIONAL)

The MF-FD can be fitted with a built-in alarm module. The alarm module include a potentialfree changing relay output for max. 48 volt / 5 A. The figure show the relay output in an unpowered state [NC], i.e. alarm state.



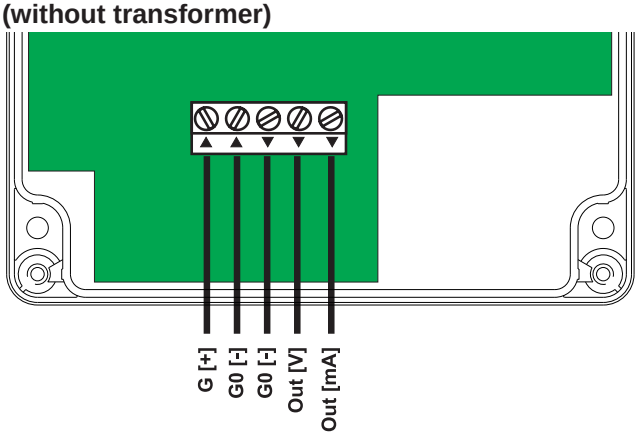
CONNECTION ALARM MODULE

(Alarm module and Transformer can't be used at the same time.)



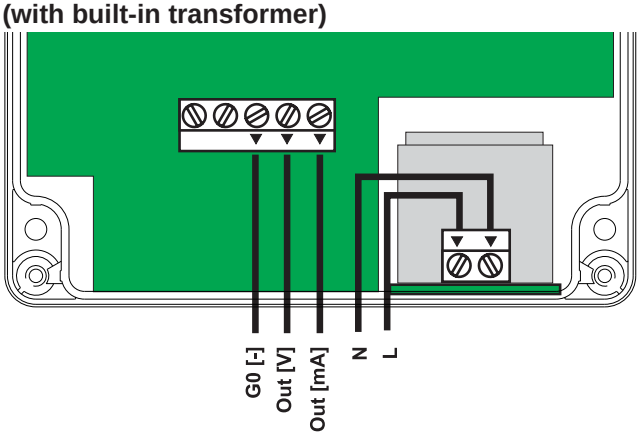
CONNECTION 24 VAC / 20...32 VDC

(without transformer)



CONNECTION 24 / 115 / 230 VAC

(with built-in transformer)



MODBUS RTU (OPTIONAL)

MF-FD can be fitted with a built-in expansion module for network communication with a computer via RS-485 serial connection. See separate instruction for Modbus RTU.

Modbus RTU can NOT be used with Alarm module or Transformer.

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