

Frequency metering (0.01 Hz – 9999 Hz) with 2 setpoints

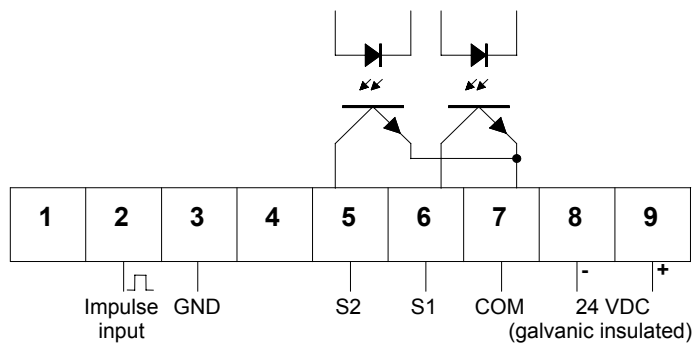
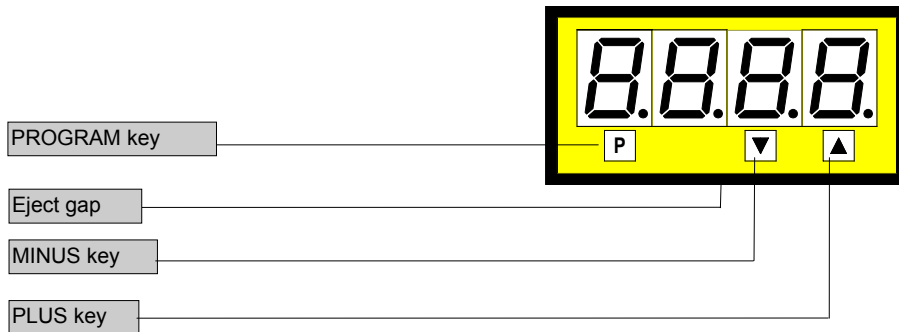
Free scalable indication and setpoints from 0 up to +9999

Standard: min/max memory - option: analogue output

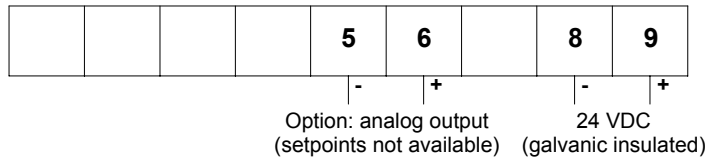
Allow to be placed side by side in grid and mosaics systems

48x24

8888



Connections for Namur and 3-wire NPN and PNP see last page. (externally 24 VDC necessary)



ORDER NUMBER OF TYPE
PFL 4.007.7782B

Options

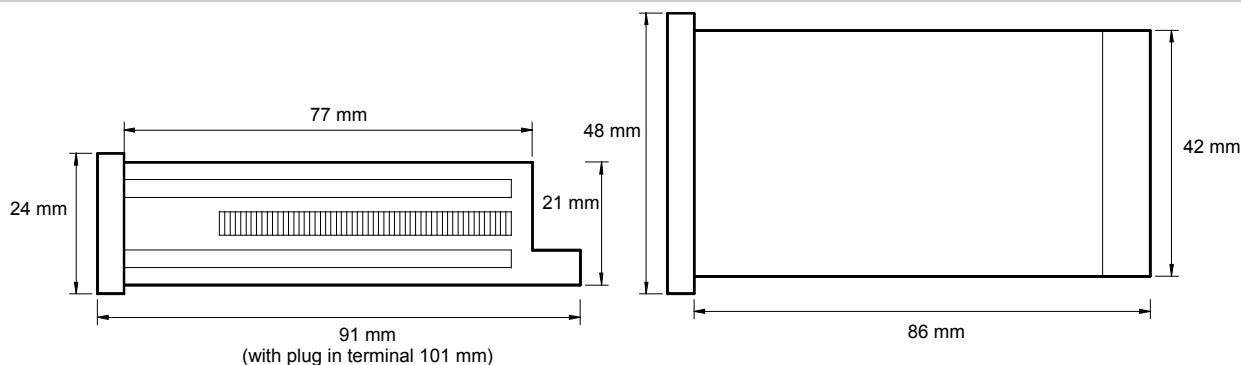
- green LED
- Protection IP54
- Plug in terminal with protection IP40
- Plug in terminal with protection IP54
- Analog output 0-10 VDC - (12 bit)
- Analog output 0-20 mA/load 500 Ω
- Analog output 4-20 mA/load 500 Ω

With analog output setpoints S1 and S2 not available!

- Setpoints as open emitter
- Dimension strip selectable (max. 8 characters)

Technical data

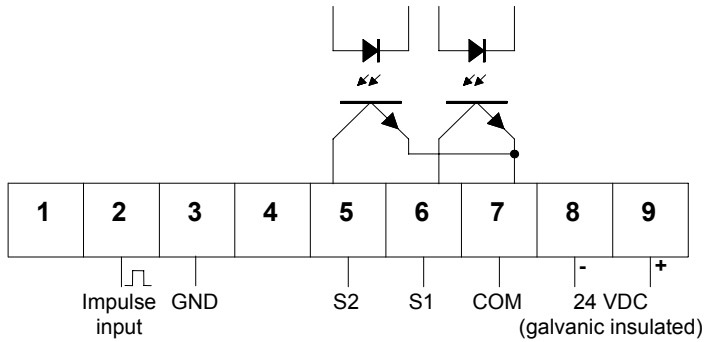
Dimensions	Housing	48 x 24 x 90 mm, including screw terminal
	Assembly cut out	45.0 ^{+0.6} x 22.2 ^{+0.3} mm
	Fastening	special quick plastic clamp proper to fix in wall thickness up to 50 mm
	Housing material	PC/ABS-blend, colour black, UL94V-0
	Protective system	at the front IP40 connection IP00
	Weight	approx. 75 g
	Connection	at the rear side via plug in connector up to 1.5 mm ²
Input	Sensors	Namur, 3-wire pick up, impulse input High/low level ---> 10 V / <6 V
	Input resistance	Ri at 10 V = 10 KΩ
	Input frequency	0.01 Hz – 9999 Hz
Output	Open collector	2 outputs supply by customers (U _B =5-40 V / I _{max} =100 mA)
	Analogue output	0-10 VDC (12 bit)
		0-20 mA/load 500 Ohm (12 bit) 4-20 mA/load 500 Ohm (12 bit)
Accuracy	Resolution	0 up to +9999
	Measuring fault	+/-0.04 % of the input frequency
	Measuring principle	frequency/pulse width measuring
	Temp. Drift	40 ppm/K
Power unit	Supply voltage	24 VDC +/-10 % galvanic insulated
	Power consumption	approx. 2 VA
Indication	Display	LED with 7 segments, 10 mm high, red 4-digit = indication 9999
	Overflow	indication of four transversal bars
	Time of indication	adjustable from 0.2 to 10.0 seconds
Ambient conditions	Working temperature	0 up to + 60 °C
	Storing temperature	-20 up to + 80 °C
Housing:		



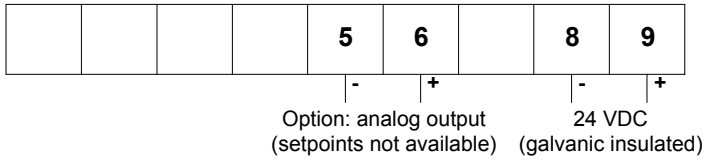
CE-sign

For unlimited use of the instrument within the directives for electromagnetic compatibility 89/336/EC frequency input wires have to be used with shielded cable and cable's shield connected to earth ground at one end only.

Connection diagram, programming, remarks



Connections for Namur and 3-wire NPN and PNP see last page. (externally 24 VDC)



Setting

1. Connect the instrument according to the wiring diagram.
2. After power on, the instruments runs into a lamp test and returns back to the standard mode.
3. Connect the desired input frequency to the measuring input.
4. Pressing the **P**-key enters the programm mode with indication of „P1“ on the display.
5. Pressing the **P** und **▲** key simultaneously steps through the different programm numbers.
6. Pressing **▲** oder **▼** key shows the current values.
7. To change values use **▲** oder **▼** key.
8. Otherwise the remaining values will be memorized automatically 7 seconds after the last touch of key with leaving program mode.

Additional key-functions in standard mode for indication of min/max values.

Simultaneously pressing of **▼** and **▲** key deletes and actualizes min/max-memory.
▲ key enters max-memory.
▼ key enters min-memory.

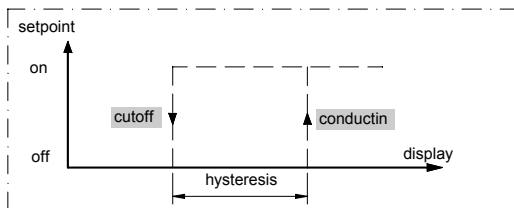
Instructions

After power on the instrument with the inbuilt microcontroller starts with an initial program activating lamp test and readout of memorized parameters in an EEPROM. In case of loosing parameters or any defects in hardware the system generates an error message „HELP“. This function prevents damage from the peripherals and human life, totally reset is required. After a new power on, the system remains in lamptest while pressing **P**-key. Then the unit storages the default parameters and is ready for a new programming.

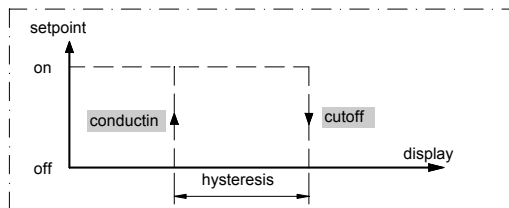
Setpoints

The following diagrams are showing the switching operation of PFE4 open collector outputs, the hysteresis is free programmable. There are two kinds of operation:

Example: operation current



Example: quiescent current



Operation current means that the open collector will be conducted if reaching the adjusted setpoint.

Quiescent current means that the open collector will be cutoff if reaching the adjusted setpoint.

Program table, example of programming

subject to technical alteration – status 02/2006 - PFL477GB.DOC

Program table 1

Program Number (PN)	Function	Remark	Display	Basic parameter after reset
1	Input of desired indication value		0 up to +9999	1000
2	Setting of decimal point for indication value	Press ▲ for desired decimal point		no deci. point
3	Setting of input frequency Adjust the numerically maximum value.	Setting in Hz The decimal point remains unconsidered.		1000.
4	Setting of decimal point for input frequency (corresponds with selected measuring range) The position of the decimalpoint corresponds to the multiplier.	Press ▲ for desired decimal point x corresponds f*1 x,x corresponds f*0.1 x,xx corresponds f*0.01 x,xxx corresponds f*0.001	0001 to 9999 000.1 to 999.9 00.01 to 99.99 0.001 to 9.999	no deci. point
5	Input of final value for analog output	Option	0 up to +9999	1000
6	Input of offset for analog output	Option	0 up to +9999	0
7	Setting delay (last input flank up to indication value „0“)	Adjustment range: 1 up to 250 seconds	1 up to 250 seconds	10
8	Input of display time		0.2 up to 10.0 s	1.0

During indication times > 7 seconds, the most supreme input frequency is limited as follows:

Indication time (s)	Maximum frequency
7	9000
8	8000
9	7000
10	6500

Exceeding the limit is indicated by transversal bars „- - -“

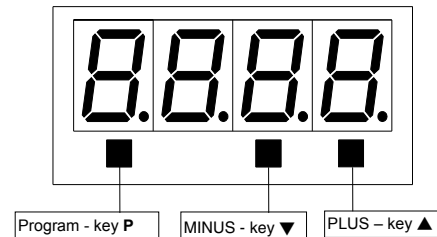
The maximally permissible input frequency is controlled by 16 kHz, the device receives a reset above this frequency through the built-in watchdog.

Program table 2
(setpoints)

S1 PN	S2 PN	Function	Display	Basic parameter after reset
61	66	Setpoint	0 up to +9999	500 / 600
62	67	Hysteresis	0 up to +9999	1
63	68	Quiescent current	0	-
		Operating current	1	1

Example for programming

Input: Frequency
Measuring value: 0-8.5 Hz
Indication: 0 Hz = 0.0 8.5 Hz = 300.0
Display refres. time: 2.0 seconds
Setpoints: S1 ==> 60.0 and quiescent current
 open collector conducting = 58.0 ==> hysteresis 2.0
 S2 ==> 150.0 and operating current
 open collector cut off = 80.0 ==> hysteresis 70.0
Analog output: 0 V output ==> display 0.0 ==> measuring value 0 Hz
 (no setpoints) 10 V output ==> display 300.0 ==> measuring value 8.5 Hz



The basic adjustments concerning to the following program example are the ground parameters after a total reset occurring through a power on with pressing P-key (see previous page).

Program advices

Pressing the P-key enters **always** the program mode with program number 1. The „P1“ begins to blink in change with the current value after 3 seconds. After further 4 seconds the system leaves the program mode and goes to the standard mode. In Program mode pressing ▼ or ▲ key selects the current values which are free scalable with both the keys. All parameters will be memorized automatically after leaving program mode.

Example for programming

Programming

Switch power on!

Lamp test

8.8.8.8

Standard mode

0

Enter program mode

P 1

To memorized value with ▼ or ▲.

1000

Set free scalable value.

3000

To program number 2 with P and ▲.

P 2

To memorized value with ▼ or ▲.

0

Set decimal point.

0.0

To program number 3 with P and ▲.

P 3

To memorized value with ▼ or ▲.

1000.

Set the free scalable input frequency in Khz. Decimal point unconsidered.

8500.

To program number 4 with P and ▲.

P 4

To memorized value with ▼ or ▲.

8500

Set decimal point.

8500.

To program number 8 with P and ▲.

P 8

To memorized value with ▼ or ▲.

10

Set display time.

2.0

The following programming steps are necessary for the setpoint programming of S1 and S2 only.

To program number 61 with P and ▲.

P 61

To memorized value with ▼ or ▲.

50.0

Set free scalable value for setpoint S1.

60.0

To program number 62 with P and ▲.

P 62

To memorized value with ▼ or ▲.

0.1

Set hysteresis of S1.

2.0

To program number 63 with P and ▲.

P 63

To memorized value with ▼ or ▲.

1

Set quiescent current.

0

To program number 66 with P and ▲.

P 66

To memorized value with ▼ or ▲.

60.0

Set free scalable value for setpoint S2.

150.0

To program number 67 with P and ▲.

P 67

To memorized value with ▼ or ▲.

0.1

Set hysteresis of S2.

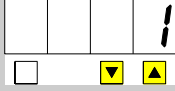
70.0

Example for programming, Connection diagrams

To program number 68 with P and ▲.



To memorized value with ▼ or ▲.

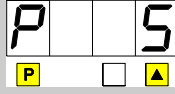


Programming finished.

All programmed values are memorized after 7 seconds. Jumps back into standard mode automatically.

The program numbers 5 and 6 are available with option analogue output only.

To program number 5 with P and ▲.



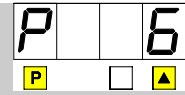
To memorized value with ▼ or ▲.



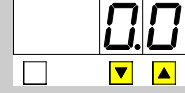
Set free scalable final indication value for analog output.



To program number 6 with P and ▲.



To memorized value with ▼ or ▲.

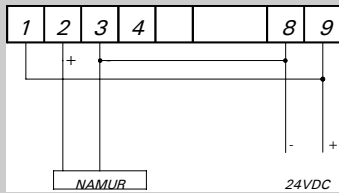


Programming finished.

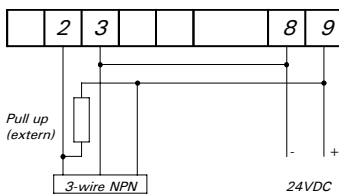
All programmed values are memorized after 7 seconds. Jumps back into standard mode automatically.

Terminal holding for different sensors

Namur



3-wire NPN



3-wire PNP

