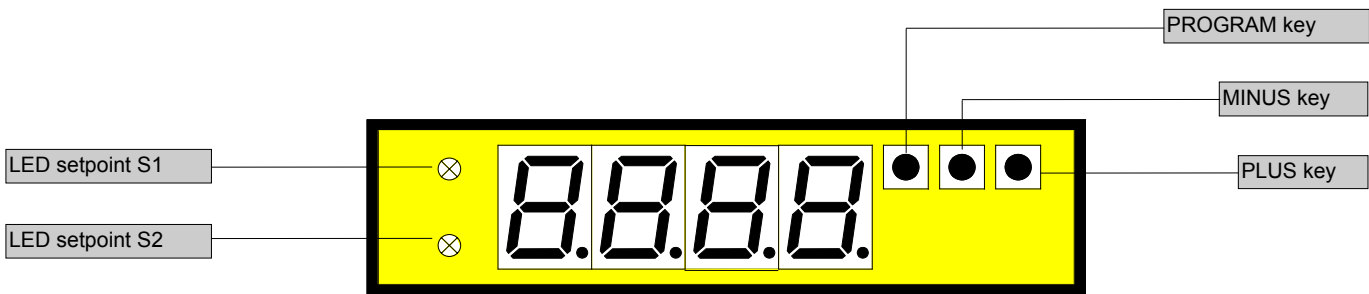


# Frequency metering 0.01 Hz – 9999 Hz with 2 setpoints

- Free scalable indication and setpoints from 0 up to +9999
- Standard: min/max memory, sensor supply - Option: analogue output
- Mounting into panels with thickness up to 50 mm

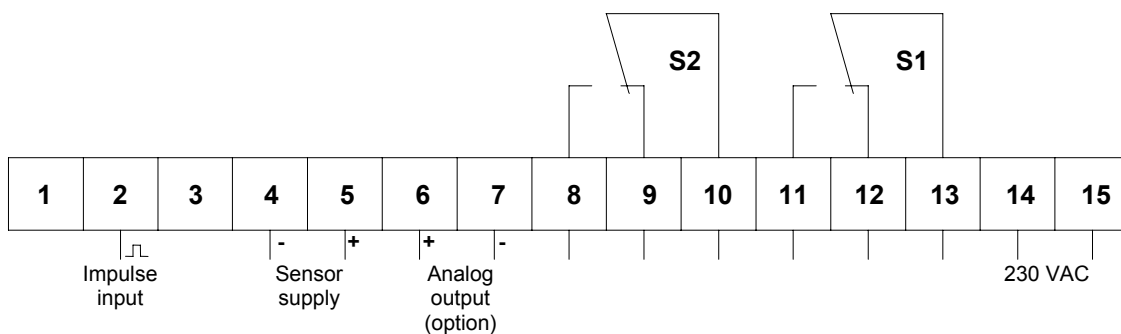
**96x24**

**8888**



ORDER NUMBER OF TYPE

**PFL 4.307.3502B**



Connections for Namur and 3-wire NPN and PNP see last page.

Power supply 115 VAC  
(connection via terminal 14 and 15)

**PFL 4.307.3402B**

Power supply 24 VDC  
- galvanic insulated - (15=plus, 14= minus)

**PFL 4.307.3702B**

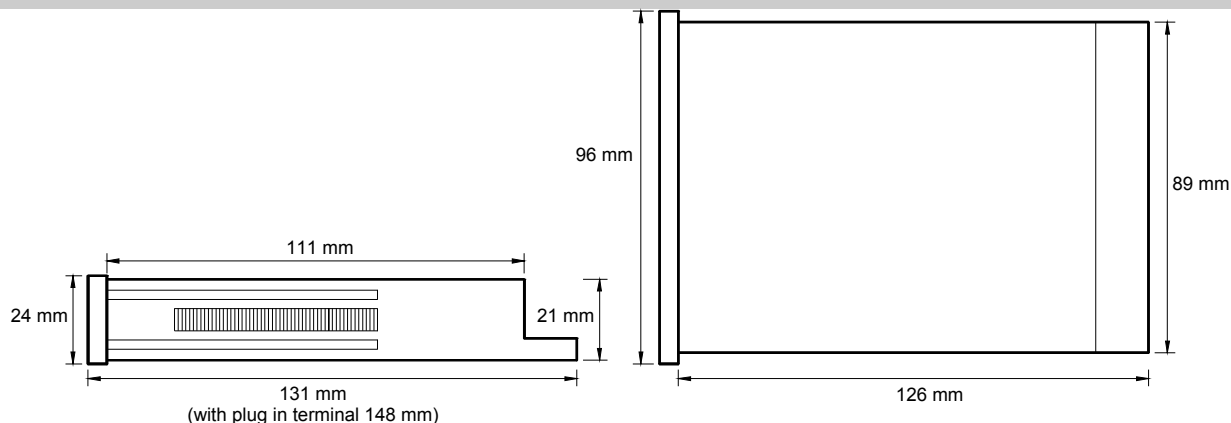
## Options

- green LED
- Protection IP54
- Plug in terminal with protection IP40
- Plug in terminal with protection IP54
- Sensor supply 10 VDC/20 mA
- Sensor supply 10 VDC/20 mA (supply voltage 24 VDC galvanic insulated)
- The sensor supply is galvanic insulated from the measuring input!**
- Analog output 0-10 VDC (12 bit)
- Analog output 0-20 mA/load 500 Ω (12 bit)
- Analog output 4-20 mA/load 500 Ω (12 bit)
- Analog output 0-10 VDC (12 bit) (supply voltage 24 VDC galvanic insulated)
- Analog output 0-20 mA/load 500 Ω (12 bit) (supply voltage 24 VDC galvanic insulated)
- Analog output 4-20 mA/load 500 Ω (12 bit) (supply voltage 24 VDC galvanic insulated)
- Other power supplies on demand

# Technical data

<b>Dimensions</b>	Housing	96 x 24 x 131 mm, including screw terminal	
	Assembly cut out	92.0 <sup>+0.8</sup> x 22.0 <sup>+0.6</sup> mm	
	Fastening	special quick plastic clamp proper to fix in wall thickness up to 50 mm	
	Housing material	PC/ABS-plastic blend, colour black, UL94V-0	
	Protective system	at the front IP40 connection IP00	
	Weight	approx. 0.290 kg	
	Connection	at the rear side via screw terminals up to 2.5 mm <sup>2</sup>	
<b>Input</b>	Sensors	Namur, 3-wire pick up, impulse input High/Low Level ----> 10 V / <6 V – U <sub>in</sub> max. 30 V	
	Input resistance	R <sub>i</sub> at 10 V ≥ 55 kΩ; at 20 V ≥ 2.5 kΩ; at 30 V ≥ 1,5 kΩ	
	Input frequency	0.01 Hz up to 9999 Hz	
<b>Output</b>	Sensor supply	24 VDC/50 mA – 10 VDC/20 mA (other sensor supplies/performances on demand) <b>The sensor supply is galvanically insulated from the measuring input!</b>	
	Relay output	charge 240 VAC/0.25 A – 24 VDC/1 A, with ohm resistive burden	
	Switching cycles	2 * 10 <sup>5</sup> at max. contact rating 10 * 10 <sup>6</sup> mechanically	
	Analogue output	0-10 VDC (12 bit)	} The analogue output is galvanic insulated from the measuring input!
		0-20 mA (12 bit) - load 500 Ohm 4-20 mA (12 bit) - load 500 Ohm	
<b>Accuracy</b>	Resolution	0 up to +9999	
	Measuring fault	+/-0.04 % of the input frequency	
	Measuring principle	frequency/pulse width measuring	
<b>Power unit</b>	Supply voltage	230/115 VAC +/- 10% (50-60 Hz), 24 VDC +/-10 % galvanic insulated	
	Power consumption	approx. 5 VA	
<b>Indication</b>	Display	LED with 7 segments, 14 mm high, red 4-digit = indication 9999	
	Overflow	indication of 4 transversal bars	
	Indication time	from 0.2 up to 10.0 seconds adjustable	
<b>Ambient conditions</b>	Working temperature	0 up to + 60 °C	
	Storing temperature	-20 up to + 80 °C	

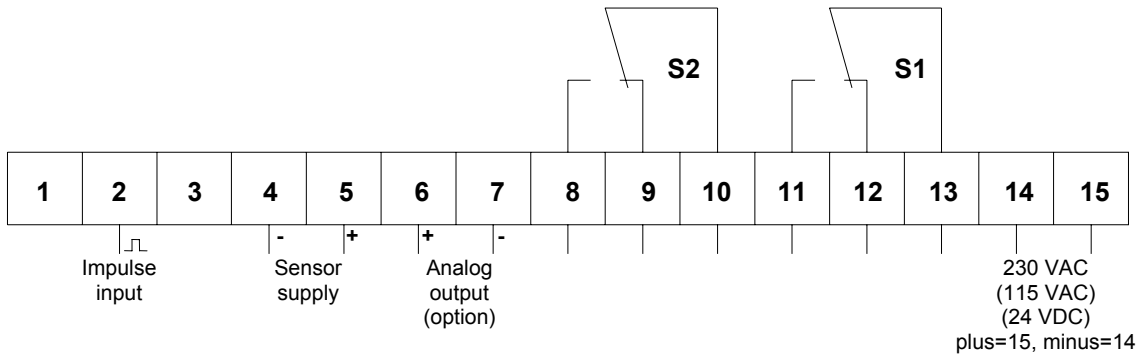
## Housing:



### 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



## 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 program mode with indication of „P1“ on the display.
5. Pressing the **P** und **▲** key simultaneously steps through the different program 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.

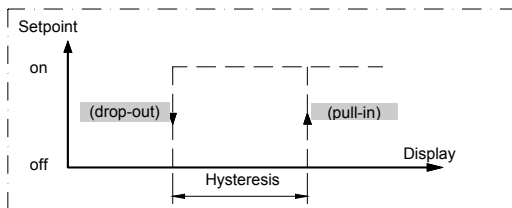
## Instructions

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.

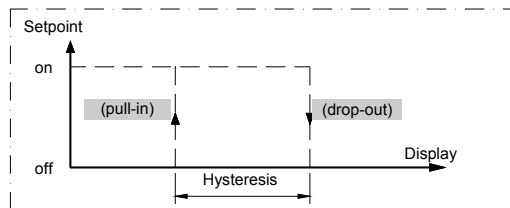
## Setpoints

The following diagrams are showing the switching operation of PFE4 relay contacts. The hysteresis is free programmable. There are two kinds of operation:

### Example: operation current



### Example: quiescent current



Operation current means that the relay contact will be pulled in if reaching the adjusted setpoint.

Quiescent current means that the relay contact will be dropped out if reaching the adjusted setpoint.

# Program table, example of programming

Subject of technical alteration - status 03/2006 – PFL473GB

## 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 decimal 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 decimal point 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 decimal 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 250s	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 „- - -“

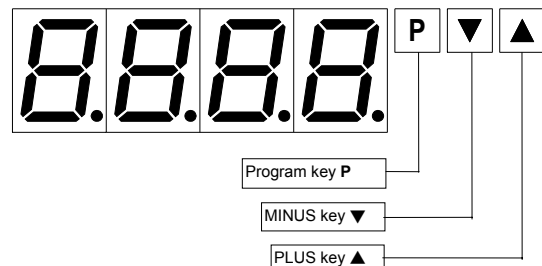
The maximally permissible input frequency is controlled by 16 kHz, the device receives a reset above this frequency through the built-in watchdog.

## Program table 2 (setpoints)

S1	S2	Function	Display	Basic parameter after reset
PN	PN			
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 KHz  
**Indication:** 0 Hz = 0.0    8.5 Hz = 300.0  
**Display refres. time:** 2.0 seconds  
**Setpoints:** S1 ==> 60.0 and quiescent current  
                   relay pull in = 58.0 ==> hysteresis of 2.0  
                   S2 ==> 150.0 and operating current  
                   relay drop out = 80.0 ==> hysteresis of 70.0  
**Analog output:** 0 V output ==> display 0.0 ==> measuring value 0 Hz  
                   10 V output ==> display 300.0 ==> measuring value 8.5 KHz



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. 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

8.500

To program number 7 with P and ▲

P 7

To memorized value with ▼ or ▲.

10

To program number 8 with P and ▲

P 8

To memorized value with ▼ or ▲.

1.0

Set display time

2.0

The following programming steps are necessary for 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 of setpoint S1.

60.0

To program number 61 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 of 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

To program number 68 with P and ▲

P 68

To memorized value with ▼ or ▲.

1

**Programming finished.**

All programmed values will be 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 ▲

P 5

To memorized value with ▼ or ▲.

100.0

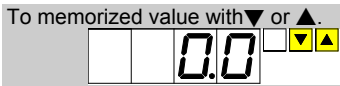
Set free scalable final indication value for analog output.

3000

To program number 6 with P and ▲

P 6

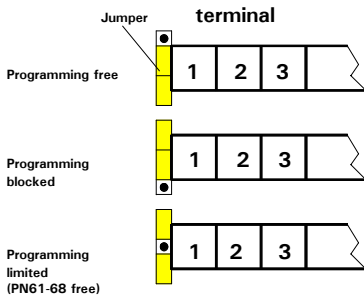
# Connection diagrams



## Programming finished.

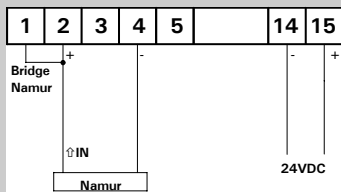
All programmed values will be memorized after 7 seconds. Jumps back into standard mode automatically.

## Setting possibilities of the jumper field on the rear side.

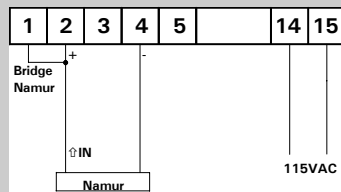


## Terminal holding for different sensors

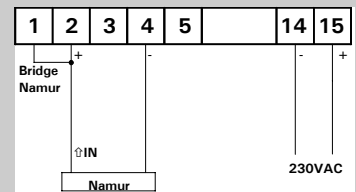
### Namur



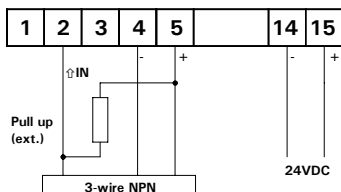
### Namur



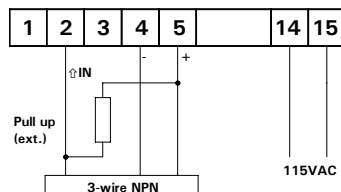
### Namur



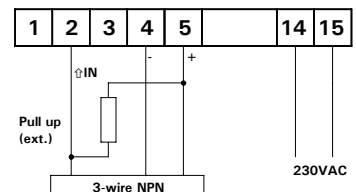
### 3-wire NPN



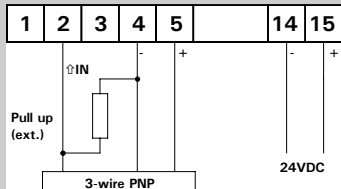
### 3-wire NPN



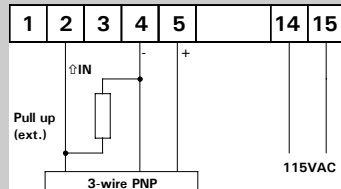
### 3-wire NPN



### 3-wire PNP



### 3-wire PNP



### 3-wire PNP

