

# SC 2400 Mini Tuning Fork Vibrating Switch

## Operating Manual

### Description :

SC2400 tuning fork switch uses two wires power supply with  $20 \sim 250 \cdot 50/60 \text{ Hz Vac / Vdc}$ . It can be utilized to detect medium in applications with  $\text{S.G.} > 0.7 \text{ g/cm}^3$  and viscosity between  $1 \sim 10000 \text{ cSt}$ . It also has compact size, which is suitable for applications with limited space.

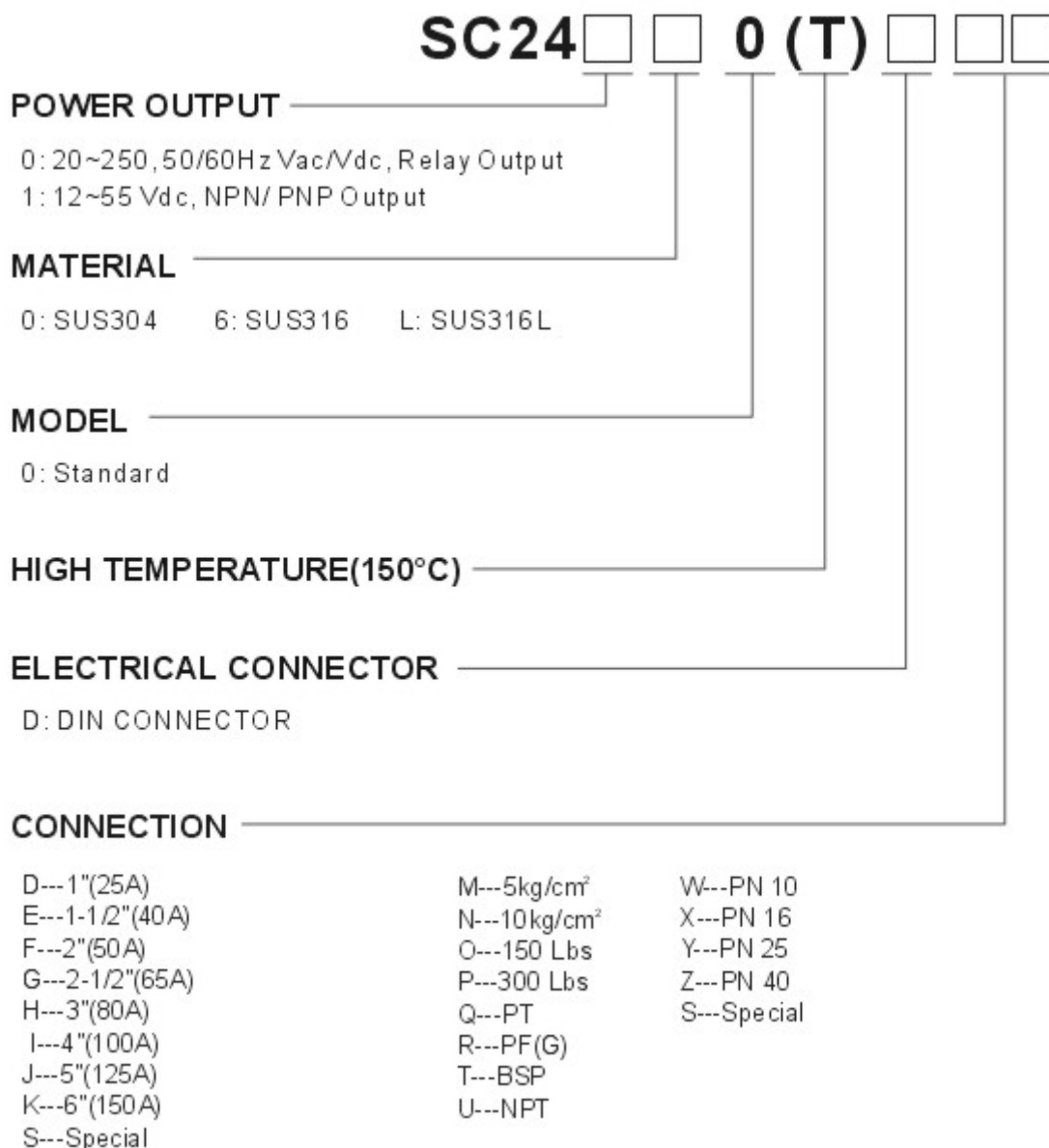
SC2400 offers 3 options of plug connections: *DIN 43650* , *Cable Connec* & *Connect As-i bus*. Furthermore, the fork can be polished(*Ra*) to meet the requirements for particular industries like pharmaceutical and food processing.

SC2400 is equipped with magnetic test function. It can examine the functioning of the switch after the switch is installed.

### Features :

- Compact size, suitable for limited space.
- Wide range of power supply from  $20 \sim 250 \text{ Vac/Vdc}$ .
- 3 options of plug connections.
- Fork polished to users' standard for industries like pharmaceutical and food processing.
- Magnetic test to examine proper functioning of the switch.

**1. Order Number :**



**2. Specification :**

**Housing**

- Housing material                               SUS 304
- Protection                                        IP 65
- Plug connection                                4-pole plug  
   -DIN 43650  
   -Cable Connect  
   -Connect As-i bus

**Process connection**

- Thread   1" PT
- Material    SUS 304,316,316L

## Tuning fork

- Material 304,316,316L
- Length Min. 100 mm
- Surface quality Option

## Weight

- Total weight **Approx. 0.4 kg**

## Electronics

- Power supply 20~250 · 50/60 Hz Vac / Vdc
- Output Contactless electronic switch
- Internal current requirement Approx. 3 mA
- Load current Min. 3 mA  
Max. 500 mA
- Vibrating frequency Approx. 355~365 Hz
- Switching time 1~3 s when covering  
1~3 s when becoming free
- Switching mode Min./Max. detecting mode by connection
- Control lamp Blue LED—Power indicants  
Red LED—Switching status indicants
- Switching point Vertical orientation : 23 mm from top of fork  
Horizontal orientation : 10 mm from fork centre
- Magnetic testing
- Protection class **I**
- Overvoltage category **III**

## Ambient conditions

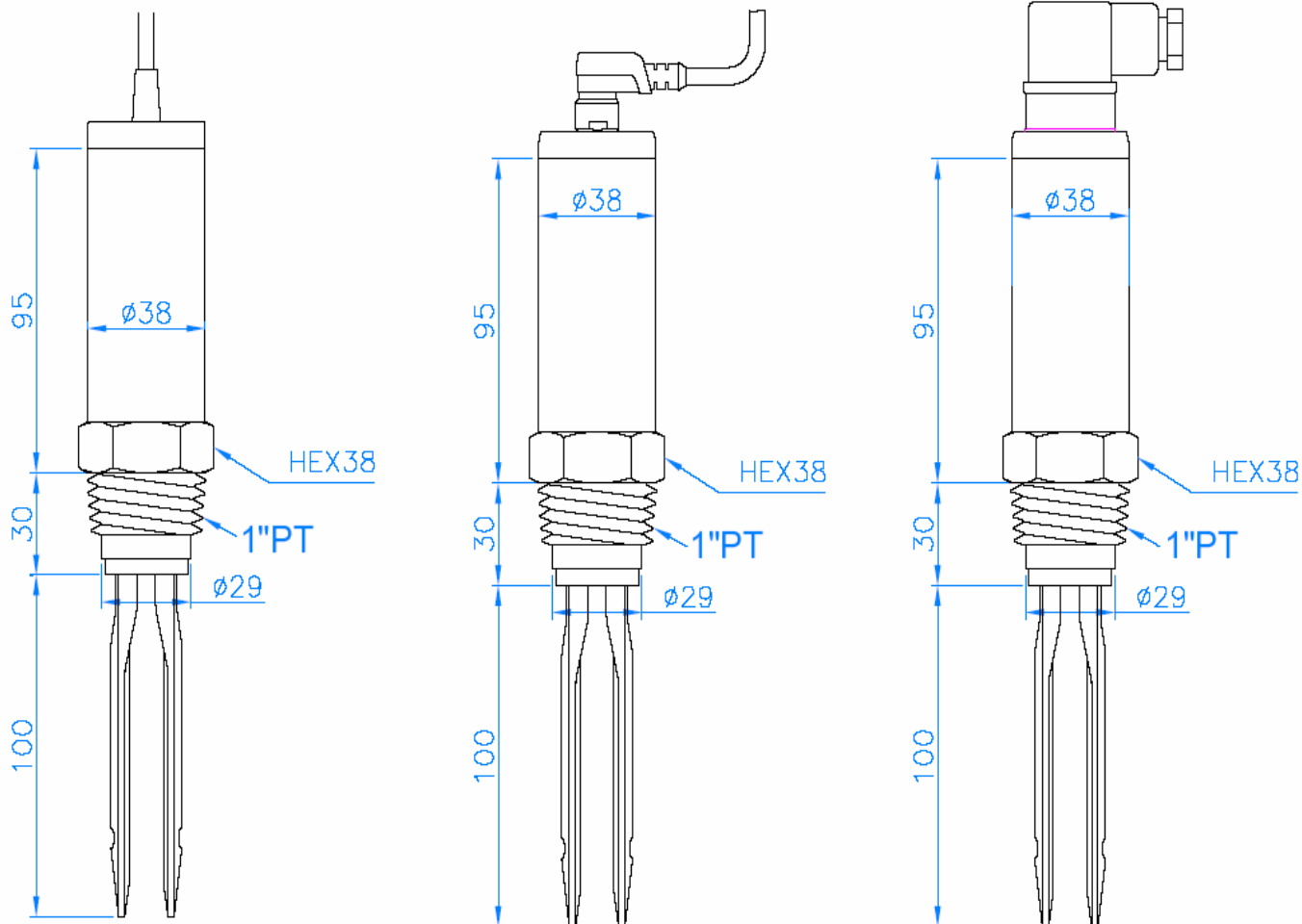
- Ambient temperature on the housing -10~+60 °C
- Storage and transport temperature -10~+70 °C
- Product temperature -10~+150 °C
- Ambient damp 20%~80% RH non-condensed
- Operating pressure Max. 40 Bar

## Product

- Viscosity 1~10000 cSt
- Density  $\geq 0.7 \text{ g/cm}^3$

### 3. Appearance :

Types of SC2400 series as shown below :



*Cable connector*

*Connect As-i bus*

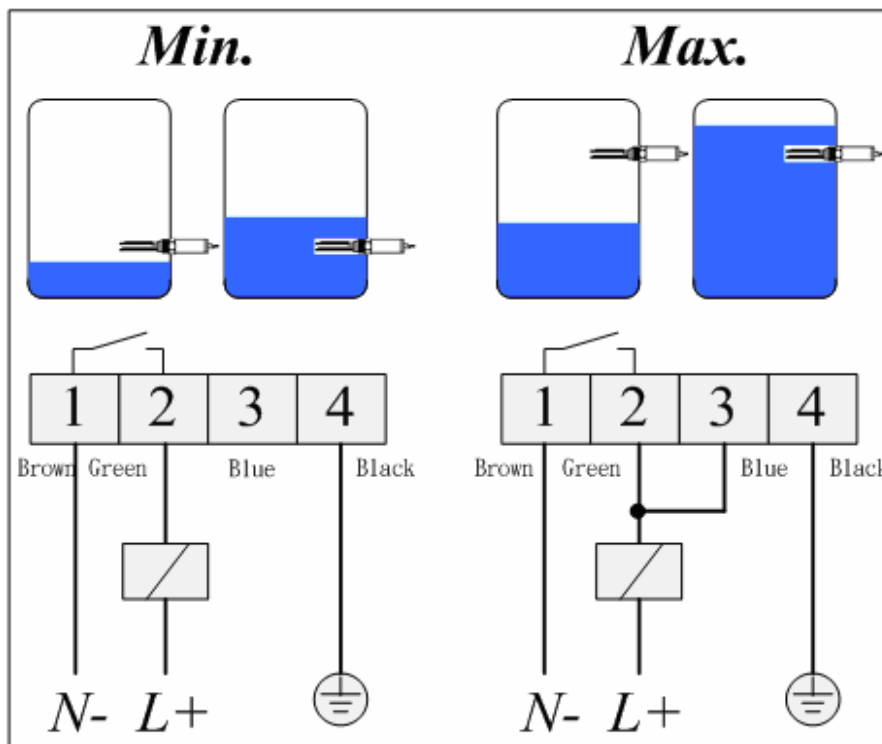
*Valve plug DIN 43650*

**Figure 1 sizes and plug connections**

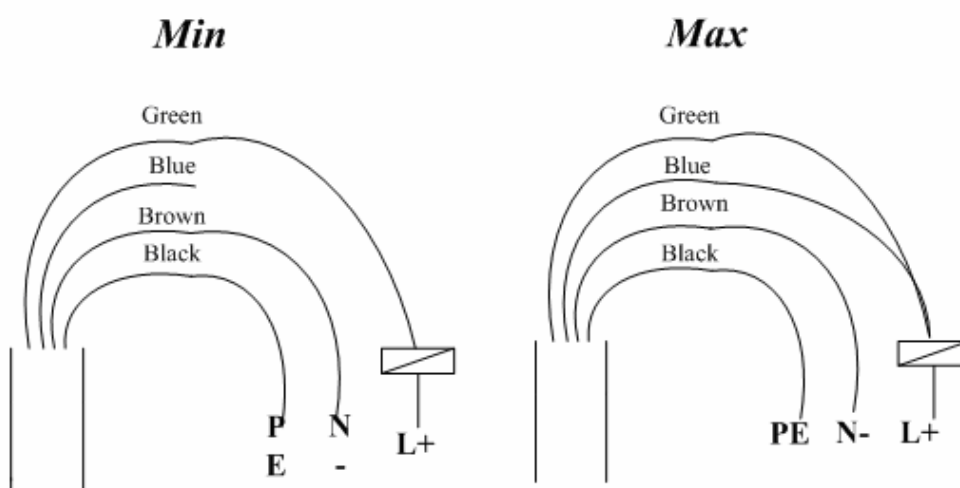
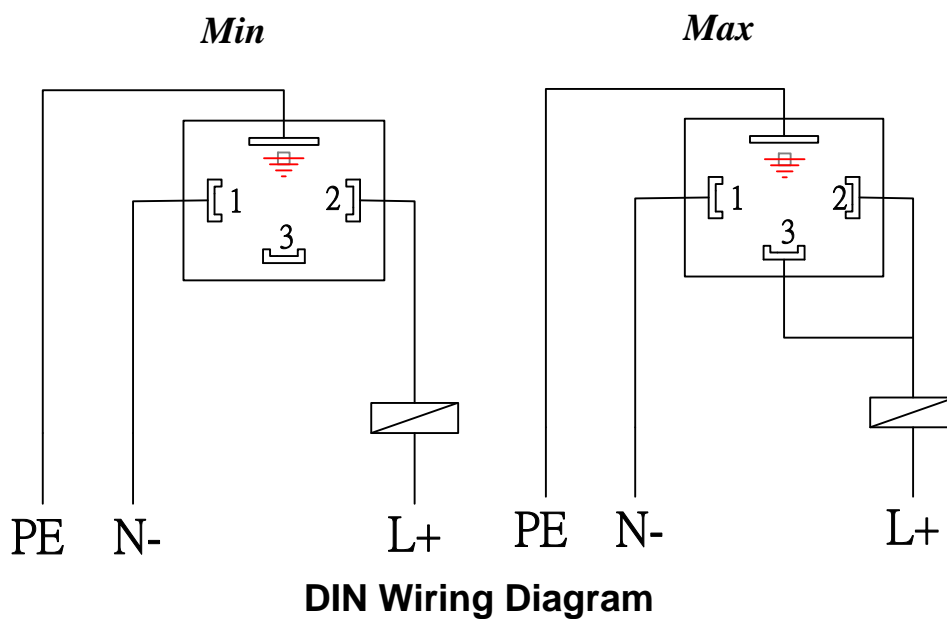
#### 4. Wiring :

Power supply is AC/DC sharing. Two wires are connected with relay output(L+/N-). Please see Figure 2.

- **Low(*Min.*) mode** : No. 1 pin(Brown) is connected to N-. No. 2 pin(Green) is connected to L+ with Relay. No.4 pin(Black) goes to ground.
- **High(*Max.*)mode** : No. 1 pin(Brown) is connected to N-. No.3 is connected to No. 2 pin(Green) to L+ with Relay . No.4 pin(Black) goes to ground.

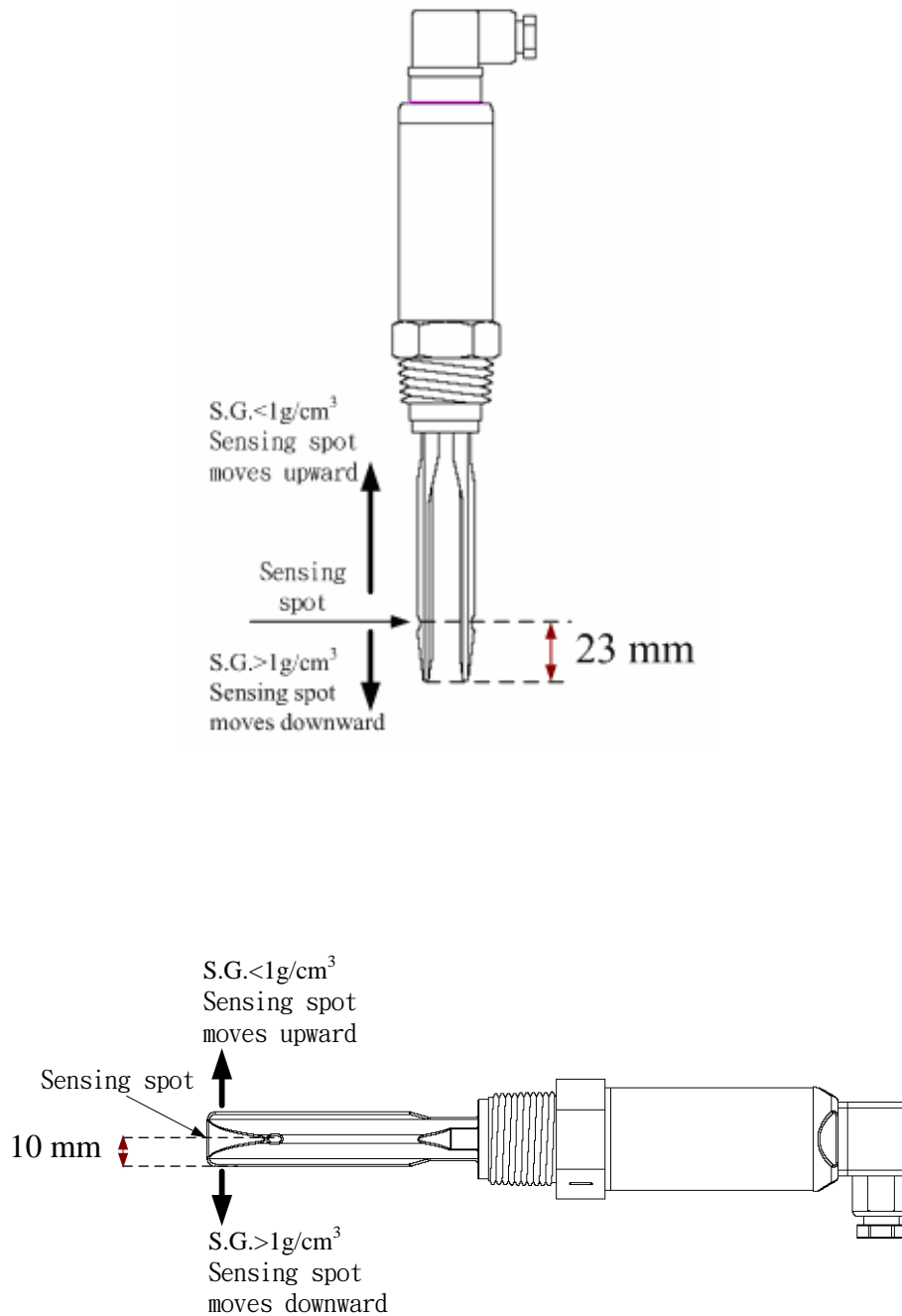


**Figure 2 Two wires wiring**



### 5. Fork Sensing Spot :

SC2400 fork sensing spot is shown as Figure 3 below. Considering testing medium is water(S.G.= $1\text{g/cm}^3$ ), sensing spot is at the fillister about 23mm from the tip. If testing medium has S.G. lower than  $1\text{g/cm}^3$ , sensing spot would be above the fillister. In contrast, sensing spot will be below the fillister.

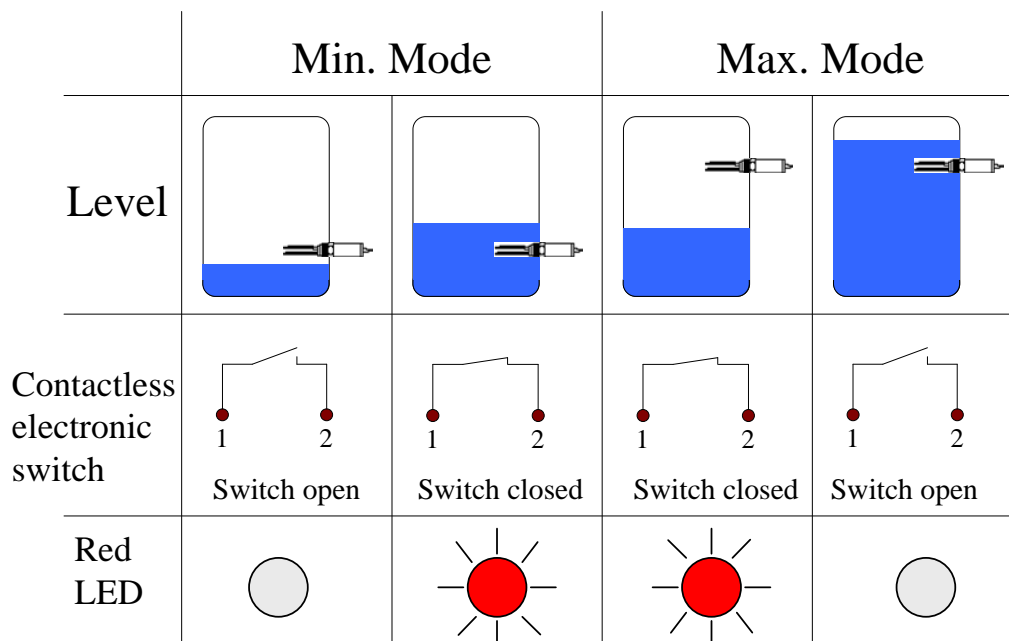


**Figure 3 Fork Sensing Spot**

## 6. Output Status :

SC2400 is equipped with two wires power supply. Relay output is connected in two wiring power(L+/N-), which offers *Min./ Max.* modes according to different pin numbers. When powered with 20~250 · 50/60 Hz Vac / Vdc, top of housing would light up with blue LED.

- **Low(*Min.*) Mode** : Tuning fork switch will be actuated 3 seconds after the power is on. Relay is *NO* and red LED indication is off. When tuning fork is covered by testing medium, vibration stops and relay becomes *NC*. Red LED indication is on.
- **High(*Max.*) Mode** : Tuning fork switch will be actuated 3 seconds after the power is on. Relay is *NC* and red LED indication is on. When tuning fork is covered by testing medium, vibration stops and relay becomes *NO*. Red LED indication is on.



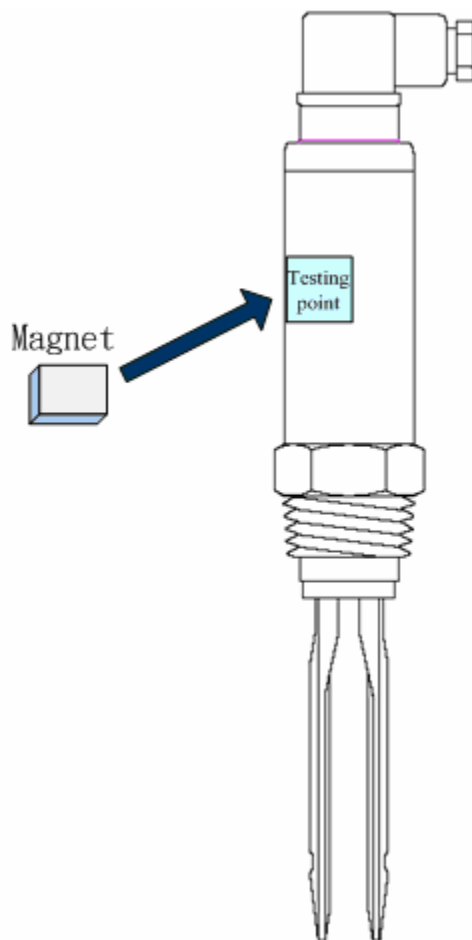
**Figure 4** *Min./ Max. Mode*



## 7. Magnetic Test :

After the switch is installed and powered, magnetic switch can be performed accordingly. Output status will switch from *NO.* to *NC.* or *NC* to *NO.* and red *LED* would switch on or off while fork continues to vibrate.

When magnet is pulled away from the housing, red LED would return as default while fork continues to vibrate. The purpose of testing is to confirm the wiring and functioning are correct.



**Figure 5 Magnetic Test Diagram**



SMERI s.r.l.  
Via Mario Idiomi 3/13  
20090 Assago MI  
Tel. +39 02 539 8941  
Fax +39 02 539 3521  
E-mail: smeri@smeri.com  
www.smeri.com

