

Applicable model:   SPF04.0X08.0X030

## Instruction Manual "Direct Pressure Sensor"

Before using this product, please read this manual thoroughly and be sure to observe the precautions in this manual. Futaba Corporation assumes no responsibility or warranty for injuries caused by the use of the product contrary to these precautions.

### 1. Preface

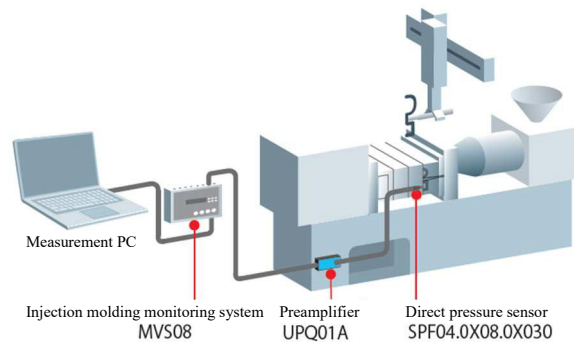
Thank you very much for purchasing of the direct pressure sensor.

First, check that there is no damage during transportation or that there is no difference in the model.

If there are any defects, contact the distributor from whom you purchased the product or our sales office.

### 2. Overview

This sensor is a crystal piezoelectric type sensor, and the detecting element is different from the conventional strain gauge type sensor. Therefore, it cannot be connected to a conventional measurement amplifier (MPS08, MPV04, and MPS01A). Connect the dedicated direct-pressure preamplifier "UPQ01" and the injection molding monitoring system "MVS08" for measurement. (Refer to the figure below.)



### 3. Precautions for Use

- Use the product within the rated capacity.
- Be careful not to apply current to the sensor body.
- Do not disassemble the internal parts. Doing so will impair the performance and safety of the product.
- For accurate measurement, the sensitivity must be set. Refer to "7. Sensitivity correction" for how to set the sensitivity.
- Do not pull the sensor cable. Connect the cables with sufficient margin so that excessive force is not applied to them. Pulling or applying excessive force may cause failure, interruption of measurement or abnormal measurement value.
- The heat resistance temperature is 200°C or less for the sensor part and cable, and 85°C or less for the connector. Use the product within the specified range.
- When disposing of the product, take care of the environment and dispose of the product.

### 4. Measurement Amplifier & Software

When using the direct pressure sensor SPF04.0X08.0X030, use MVS08 software of the following version or later. The range setting of the direct pressure preamplifier UPQ01 should be set to "I".

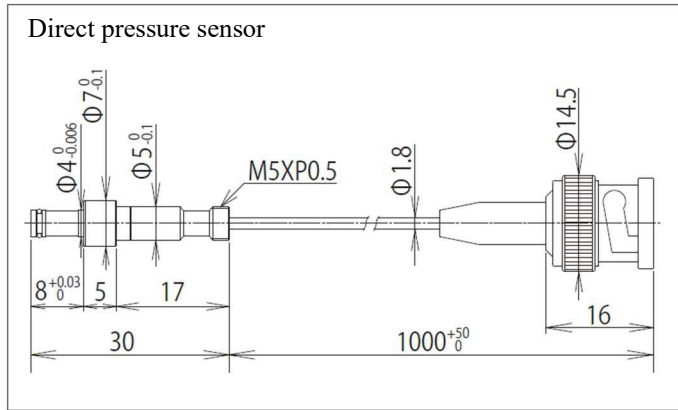
("II" and "III" are not available because they are spare.)

- Measurement software version on PC side           Ver.1.0.0.23
- Firmware version in MVS08 amplifier           Ver.01.00.34

If you are using an old version, please download the latest software from our website and use it after updating.

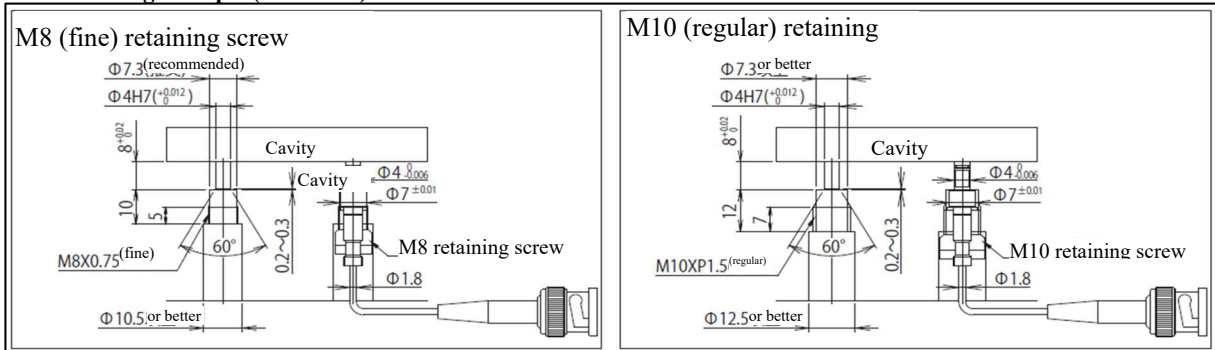
URLs for the latest software downloads: [http://www.futaba.co.jp/precision/mold\\_marshall/software](http://www.futaba.co.jp/precision/mold_marshall/software)

## 5. Product Specifications (Unit: mm)



Product code	SPF04.0X08.0X030
Rated capacity	150MPa
Permitted overload	200MPa
Sensitivity	-20pC/MPa
Nonlinearity	$\pm 1.0\%$ F.S.
Operating temperature	Mold temperature not to exceed 200°C
Insulation resistance	$10^{13}\Omega$ (25°C)

## 6. Mounting example (Unit: mm)



### ※Precautions for sensor installation

- Finish the mounting hole of the sensor tip with  $\Phi 4H7$ .
- The butt surface of the sensor flange and the edge of the sensor tip hole should be chamfered at  $60^\circ$ .
- Check that the mounting holes and sensor are free of dirt and other foreign matter.
- Insert the sensor into the mounting hole so that the O-ring is not damaged.
- Do not hit the sensor with a tool when installing or removing the sensor. Otherwise, the sensor may be damaged. When installing or removing the sensor, use the "Sensor securing wrench: EPSSZT-FXWR" and "Sensor removal wrench: EPSSZT-PLWR".
- Fix the retaining screw with a tightening torque of 3 to 4N·m.
- We recommend mounting the sensor so that the sensor tip surface is flush with the cavity surface.
- If the sensor tip surface protrudes from the cavity surface, the sensor tip surface can be machined to a maximum of 0.5mm.
- The minimum bending radius of the sensor cable is R18 (operating wiring). (R7.2 for fixed wiring)

## 7. Sensitivity correction

Sensor sensitivity varies individually. Sensor-specific sensitivity must be entered on the measurement software and corrected. For the mark band value of the sensor, insert a decimal point "." between the first digit and the second digit as shown in the figure below.

(Example) When a sensor is connected as shown in the figure below, enter "2.101" in the sensor sensitivity category of the software.



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