LIQUID DETECTION SENSOR

TK-020 SERIES

OPERATION MANUAL

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Introduction

・We appreciate that you have purchased our liquid detection sensor .
・Before you install or operate it, please read this operating manual thoroughly, and follow the Instruction in order to avoid any accident, malfunction, defects, and hazards.
・Please keep this manual with good care as long as the sensor is operating.

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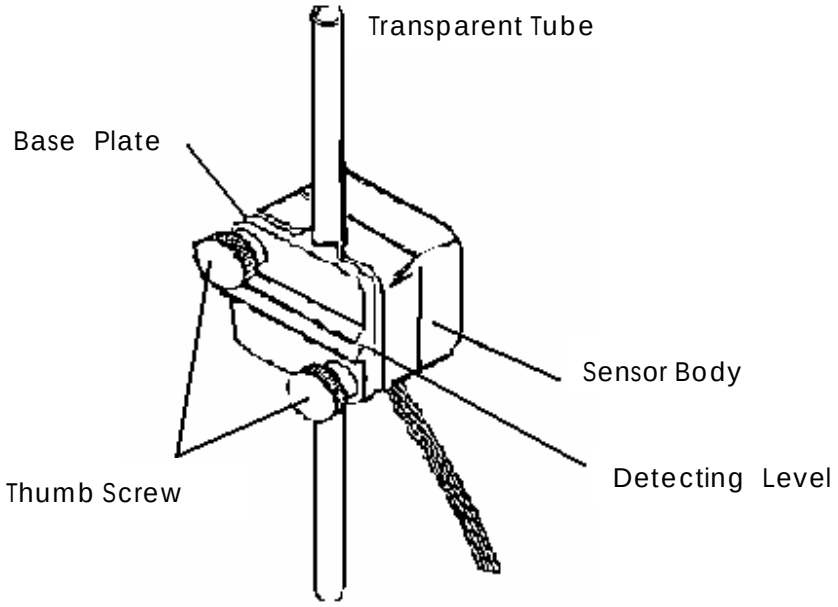
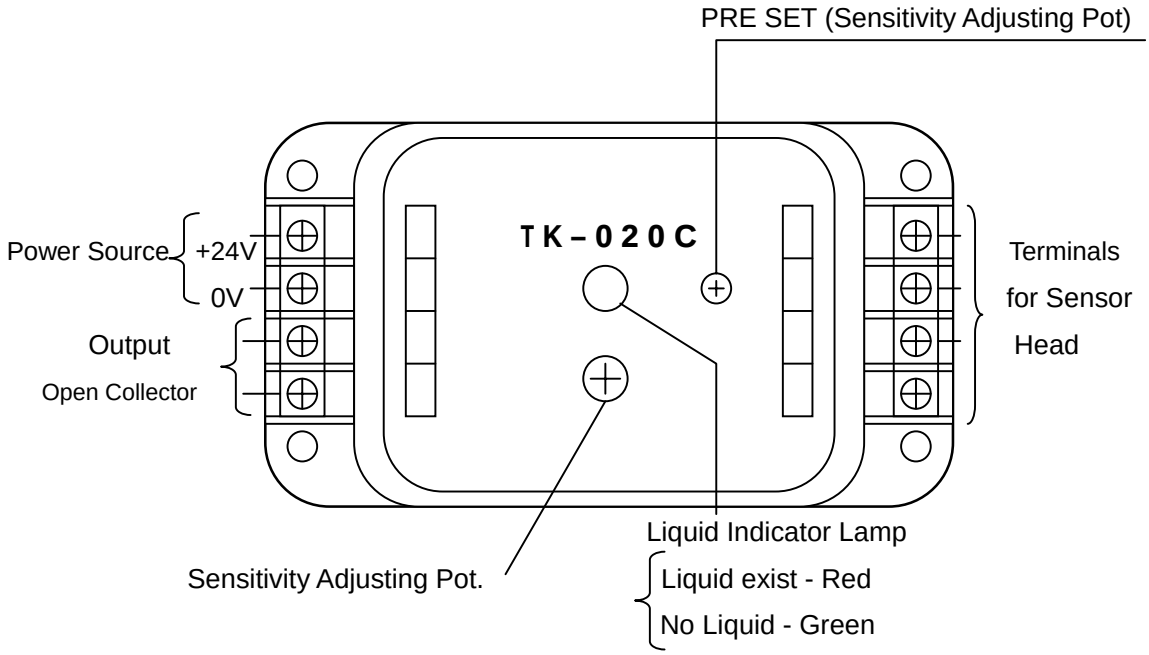
1. Designation of Sensors

(1) Sensor Head (TK-020M)



(2) Control Unit (TK-020C)



2. Installation

You can simply install into a transparent tube, grasping the tube between Sensor Body and Base Plate tightened by the Thumb Screw. Refer to the illustrations on the former section.

CAUTION

(1) Be sure that the sensing surface (Light emission/reception window) and the tube surface must contact completely each other.

(2) Be aware that the Base Plate is so fragile that over-tightening with Thumb Screws may cause the crack of it.

(3) Recommend the torque for tightening will be approx. 2.5〜3.0kgf･cm, and avoid distortion of the Base Plate during tightening simultaneously.

3. Wiring Instruction

(1) Generally 4-line flat cable is supplied with Sensor Head by 2-meter long.

(2) Connect each line with the terminal on Control Unit as below:

Red·····PRO
White·····E1
Blue·····E2
Orange···REC

(3) Connect the correct power source (DC24V) to the terminals +24V and 0V respectively.

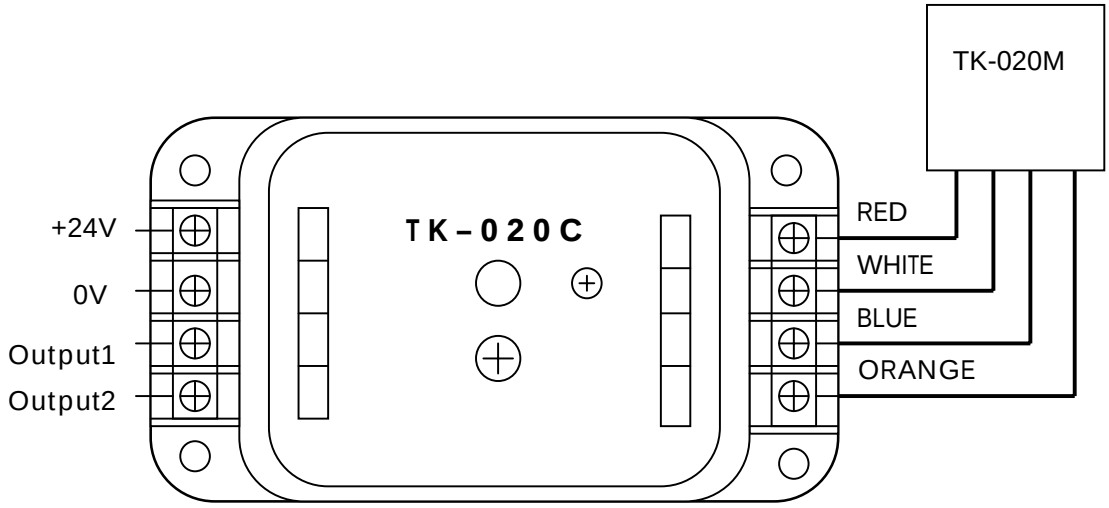
(4) Avoid contact between Red lines and either of White or Blue line. Unless, the serious destruction on Sensor will occur.

CAUTION

Keep the load current NOT EXCEEDING 50mA. Unless, the output circuit of Sensor may be destroyed.

You cannot apply 2 or more Sensor Heads into one Control Unit. One Control Unit must accept only one of Sensor Head.

(5) Don't make any lines contact each other when the power is applied.



4. Adjustments

(1) No Liquid inside the tube

① Install Sensor Head on the tube, and apply the power into it, as followed by the foregoing procedure.
Turn SENSITIVITY Adjusting Pot.(SAP) located in Amplifier Unit fully counter-clockwise(C-CW) for LOW direction as shown on the panel until the mark △ has met with the pot.
LIQUID INDICATOR LED (LIL) will become red.

② Turn PRE SET Adjusting Pot.(PSAP) C-CW until LIL changes its color from red into green, then stop turning.

③ Turn SAP fully clockwise(CW) for HIGH direction until the mark ▲ has met with the pot. LIL shows green.

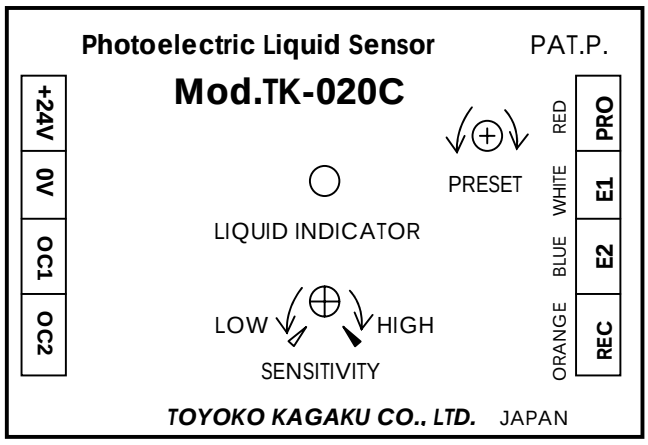
(2) Liquid Exist inside the tube

① Install Sensor Head on the tube, and apply the power into it, as followed by the foregoing procedure.
Turn SENSITIVITY Adjusting Pot.(SAP) fully clockwise(CW) for HIGH direction until the mark ▲ has met with the pot.
LIQUID INDICATOR LED (LIL) will become green.

② Turn PRE SET Adjusting Pot.(PSAP) CW until LIL changes its color from green into red, then stop turning.
In case that LIL will not change the color, fully turn C-CW though.

③ Turn SAP fully counter-clockwise(C-CW) for LOW direction until the mark △ has met with the pot. LIL shows red.

Chart of Control Unit (TK-020C) Panel



IMPORTANT

It is recommended that Liquid Detecting Sensors should be maintained once a year or more, for adjusting its sensitivity, during Sensors keep operating.

If the Sensors are applied for permeable liquids against the tube; for example hydrogen chloride (HCl), the substances may be exposed on the surface of the tube in liquid phase or in solid phase.
When such a substance may have observed, remove Sensors from the tube and wipe off thoroughly the substance from both the sensing window of Sensors and the tube surface. The adjustment procedure can be then achieved.

5. Specifications

Model NO.	Sensor Head TK-020M, Control Unit TK-020C
Power Source	DC24V±10%
Current Consumption	55mA below
Tube O.D.(inch)	3～6mm
Detecting Method	Infrared Photoelectric Device
Output	NPN Transistor Open Collector, 50mA
Ambient Temperature	0℃～60℃
Sensitivity Adjust	Available (See **4.** for details)
Water Protection	Available for Sensor Head (Silicon stuffed-in)
Body Material	Head : Poly Carbonate, Control Unit : ABS Resin
Cable	Flat-cable, 4-line, 2 meters long (st'd)
Weight	Sensor Head : 50g ,Control Unit : 75g