



|                      |                                 |                                                                       |                         |                    |              |            |            |            |
|----------------------|---------------------------------|-----------------------------------------------------------------------|-------------------------|--------------------|--------------|------------|------------|------------|
| Basic Features       | Working Principle               | Optical detection principle                                           |                         |                    |              |            |            |            |
|                      | Sensing method                  | Diffuse                                                               |                         | Limited-reflective | Through-beam |            |            |            |
|                      | Type                            | Rectangular                                                           |                         |                    |              |            |            |            |
|                      | Sensing distance                | 10~300mm                                                              | 5~1000mm                | 5~140mm            | 5000mm       | 20m        |            |            |
|                      | Spot size                       | -                                                                     |                         |                    |              |            |            |            |
|                      | Minimum sensing object diameter | -                                                                     |                         |                    | Ø6mm         | Ø10mm      |            |            |
|                      | Light source                    | Infrared LED(940nm)                                                   |                         |                    |              |            |            |            |
|                      | Indicator                       | Running: green; Output: red                                           |                         |                    |              |            |            |            |
|                      | Sensitivity adjustment          | 1-turn potentiometer                                                  |                         |                    |              |            | -          |            |
| Electrical Data      | Operation model                 | Light.on/Dark.on switching                                            |                         |                    |              |            | Dark.ON    | Light.ON   |
|                      | Output model                    | NPN/PNP available by model                                            |                         |                    |              |            |            |            |
|                      | Response time                   | ≤1.6ms                                                                |                         |                    | ≤3.3ms       |            |            |            |
|                      | Response frequency              | ≤300Hz                                                                |                         |                    | ≤150Hz       |            |            |            |
|                      | Repeatability                   | ≤5%                                                                   |                         |                    | -            |            |            |            |
|                      | Hysteresis                      | ≤20%                                                                  |                         |                    | -            |            |            |            |
|                      | Operating Voltage               | 10~30V ±10%                                                           |                         |                    |              |            |            |            |
|                      | No load current                 | ≤25mA                                                                 |                         |                    | ≤20mA        |            |            |            |
|                      | Voltage drop                    | <1.5V                                                                 |                         |                    |              |            |            |            |
|                      | Load current                    | ≤100mA                                                                |                         |                    |              |            |            |            |
|                      | Insulation resistance           | ≥50MΩ/500V DC                                                         |                         |                    |              |            |            |            |
|                      | Dielectric strength             | 1000V AC at 50/60Hz for 1 min                                         |                         |                    |              |            |            |            |
|                      | Protection Circuit              | Reverse Polarity Protection/Surge protection/Short-circuit Protection |                         |                    |              |            |            |            |
|                      | Environmental Conditions        | Operating Temperature                                                 | -25℃~+55℃ (No Freezing) |                    |              |            |            |            |
| Storage Temperature  |                                 | -30℃~+70℃ (No Freezing)                                               |                         |                    |              |            |            |            |
| Operating Humidity   |                                 | 35%~85% RH (No Condensation)                                          |                         |                    |              |            |            |            |
| Storage Humidity     |                                 | 35%~95% RH (No Condensation)                                          |                         |                    |              |            |            |            |
| Ambient illumination |                                 | Incandescent lamps≤1,000lux; Sunlights≤10,000lux                      |                         |                    |              |            |            |            |
| Vibration resistance |                                 | 10~55Hz, 1.5mm double amplitude for 2hours each in X/Y/Z directions   |                         |                    |              |            |            |            |
| Enclosure rating     |                                 | IP65                                                                  |                         |                    |              |            |            |            |
| Mechanical Data      | Tightening torque, max.         | 0.5N.m                                                                |                         |                    |              |            |            |            |
|                      | Connection                      | 2m/3-wire Cable                                                       |                         |                    |              |            |            |            |
|                      | Dimensions (WxHxD)              | 20.0x31.0x11.0mm                                                      |                         |                    |              |            |            |            |
|                      | Material                        | PBT                                                                   |                         |                    |              |            |            |            |
|                      | Weight                          | 50g                                                                   |                         |                    | 93g          |            |            |            |
|                      | Accessories                     | Nuts, Bracket, Screwdriver                                            |                         |                    |              |            |            |            |
| Model                | NPN                             | PTV-D30N                                                              | PTV-D70N                | PTV-X09N           | PTV-T500N    | PTV-TM20AN | PTV-TM20NO | PTV-TM20NC |
|                      | PNP                             | PTV-D30P                                                              | PTV-D70P                | PTV-X09P           | PTV-T500P    | PTV-TM20AP | PTV-TM20PO | PTV-TM20PC |

Fiber Optic  
Fork  
Photoelectric  
Inductive  
Capacitive  
Magnetic  
Contact  
Ultrasonic  
Curtains

Selection Guide

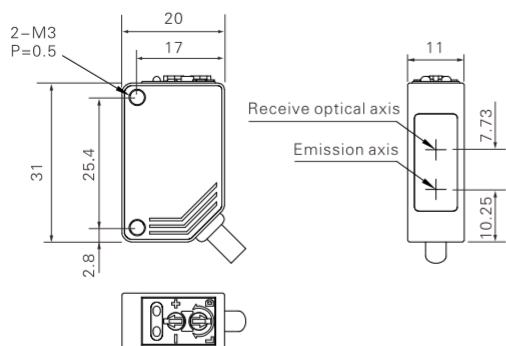
Cylindrical  
Rectangular  
Ultra-slim  
BGS  
Time-of-Flight  
IP69K  
Reflector

# Square Photoelectric Sensor

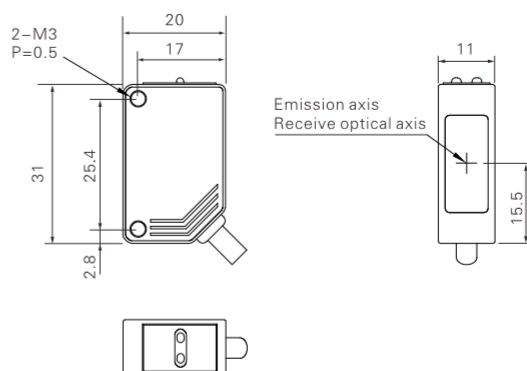
## Dimensions

Unit: mm

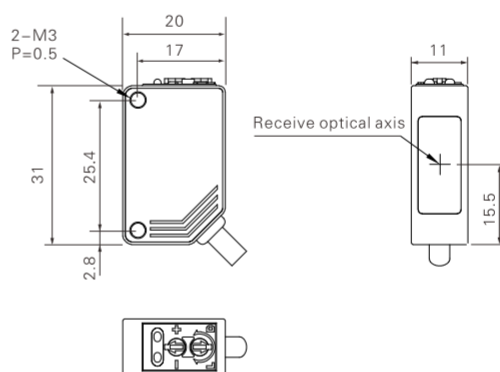
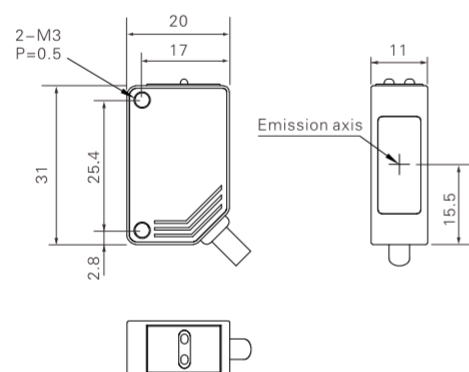
### PTV-D30/PTV-D70/PTV-X09



### PTV-TM20N0/PO/NC/PC

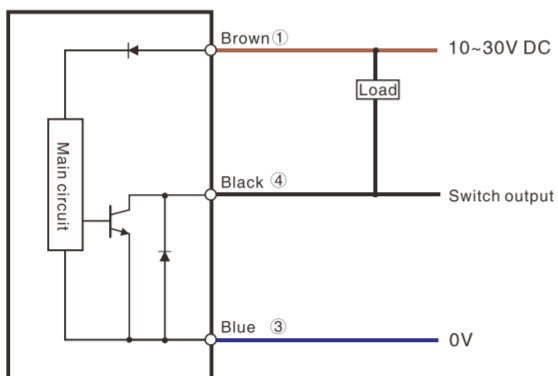


### PTV-TM20AN/AP PTV-T500



## Circuit diagram

### NPN Output



### PNP Output

