

TP-12 Low-Power

Calibration Optical Probe Datasheet

TP-12 optical probe is independently developed, designed, and manufactured by Tespro, specifically tailored for applications such as pulse sensing, online energy monitoring, and solar power systems. It accurately senses visible and infrared LED pulses, converting them into electrical signals for reliable data support in online sensing and monitoring. Featuring a miniature design with dual power supply modes: the LED indicator is enabled at +5V, while +3.3V is tailored for low-power battery systems with the LED indicator automatically turned off. It supports circuit and casing customization, offering flexible OEM/ODM services for pulse sensing, online energy monitoring, solar applications, and system integration.



Senses visible / infrared light
Converts to electrical pulse



DC 5V / DC 3.3V (Optional)



Standby current: <1μA
Instantaneous pulse current: <140μA



IP54
-40°C to +70°C
5% to 95% RH (Non-condensing)

Typical Application Scenarios



Electricity Meter Accuracy Verification

For on-site data collection and accuracy verification of various electronic electricity meters.



Single-phase / Three-phase Meters

For pulse collection and metering accuracy verification of single-phase and three-phase electricity meters.



Smart Meter Testing

For LED optical pulse collection, communication function testing and system integration testing of smart meters.



Mechanical Meter Pulse Collection

For auxiliary optical pulse collection and metering accuracy verification of mechanical (induction) meters.



Production Line Mass Testing

For batch pulse collection and centralized verification in electricity meter manufacturing.



On-site Portable Verification

For field verification and inspection in remote areas without grid power or network access.

Application Topology



Core Advantages



Dual Voltage & Ultra-low Power

Supports selectable DC 5V / 3.3V dual voltage (LED indicator enabled at 5V; disabled at 3.3V). Standby current <1μA, instantaneous pulse current <140μA. Ultra-low power, designed for battery-powered and solar applications.



Standard TTL Pulse Output

Standard TTL forward pulse output. Connect a 1MΩ load to V+. Stable signal amplitude, perfectly matching MCUs and meter calibration devices for accurate data acquisition.



Mechanical Fixing

Standard 3M tape, optional magnetic strip or Velcro. Supports custom casing/circuits, adapting to narrow spaces like online monitoring and system integration.



High-sensitivity Optical Sensing

High-sensitivity optical sensing for visible/infrared LED pulses, converting light into electrical signals. Designed for online monitoring and solar applications.



Structural Design

Compact 22mm x 17mm body, weighing only 16g. Impact-resistant ABS+PC casing, durable against collisions and drops.



Strong Weather Resistance

Operating temperature -40°C ~ +70°C, IP54 rated. Withstands harsh environments (cold, heat, humidity) for long-term stable operation.

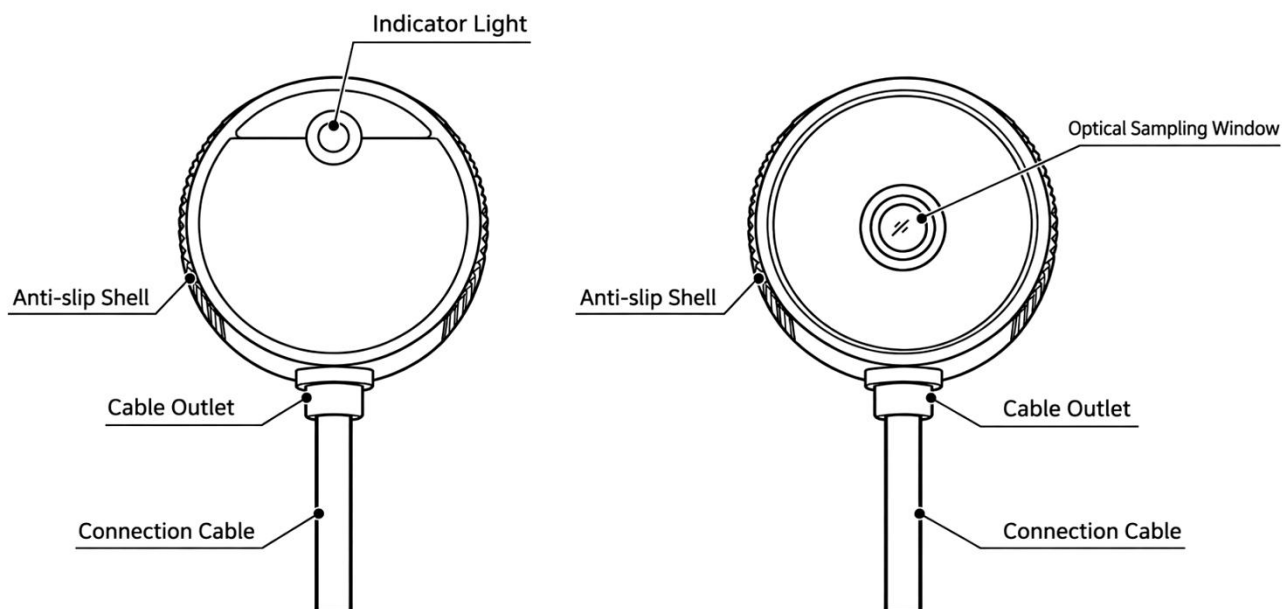
Product Features

- Standard power: DC 5V / 3.3V dual voltage selectable.
- Ultra-low power: standby current < 1μA, pulse current < 140μA.
- LED indicator: on at 5V, off at 3.3V. Ideal for battery-powered and solar applications.
- Standard TTL forward pulse output. Connect a 1MΩ load to V+ for stable signal amplitude.
- High-sensitivity optical sensing for visible/infrared LED pulses, converting light into electrical pulses.
- Standard 1m cable, custom lengths available.
- Standard bare wire connector, optional plugs available for calibration devices.
- Standard 3M tape, optional magnetic strip/Velcro. Fits narrow spaces for online monitoring and system integration.
- Compact 22mm x 17mm, 16g. Easy to install.
- Impact-resistant ABS+PC casing, compact and durable.
- Operating temp -40°C ~ +70°C, IP54 rated. Withstands harsh environments (cold, heat, dust).

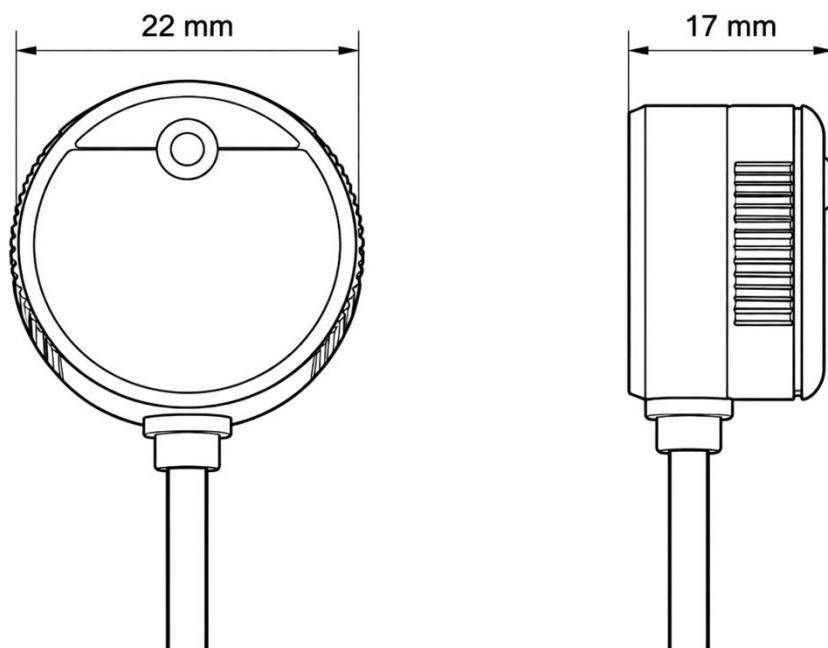
Specifications

Category	TP-12
Power Supply & Consumption	
Power Supply	DC 5V / 3.3V (Optional)
Power Status	LED on at 5V, off at 3.3V
Standby Current	< 1 μ A
Pulse Current	< 140 μ A
Indicator Light	1 pc
Signal Output	
Output Level	TTL level (1M Ω load to V+ recommended)
Wavelength	Approx. 900nm
Output Type	Forward electrical pulse (senses visible / infrared light)
Interface & Cable	
Cable Length	Standard 1m, custom lengths available
Connector	Standard bare wire (custom plugs available)
Installation & Fixing	
Fixing Method	Standard 3M tape; optional magnetic strip / Velcro
Mechanical Properties	
Casing Material	Impact-resistant ABS + PC casing
Dimensions	Diameter 22 mm / Height 17 mm
Weight	16 g
Environment & Protection	
Operating Temperature	-40°C ~ +70°C
Storage Temperature	-20°C ~ +60°C
Operating Humidity	5% ~ 95% RH (Non-condensing)
Protection Rating	IP54
Standards & Certifications	
Product Certification	CE, RoHS

Interface Diagram



Dimensions



Accessories & Packaging



Component Information



TP-12 Calibration Optical Probe



One World One Tespro

TesPro USB Drivers

Q: <https://www.tespro.com/technical-download/>

Official Website: www.tespro.com

Email: sales@tespro.com

Tel: +86-7563233800

Address: No. 2, Innovation Road, Xiangzhou District,
Zhuhai City, Guangdong Province, China

Scan to Download



Driver Download Card



Packaging Information



Dimensions

139 × 125.7 × 56.8 mm

Made of eco-friendly, recyclable packaging materials,
in compliance with green environmental standards.

About Tespro

Tespro is a 25-year veteran industrial IoT equipment manufacturer specializing in AI computing devices, industrial IoT terminals, and power communication equipment, along with proprietary software. It has grown into a top global manufacturer in IoT and power acquisition. Its product matrix includes AI devices, gateways, routers, DTUs, meter optical probes, testing instruments, and smart management platforms, serving power energy, industrial automation, and smart buildings. With branches in the US, UK, Singapore, Hong Kong, and Zhuhai (China), its products are exported to over 150 countries. Partnering with Fortune 500 companies, Tespro is a trusted global partner.

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