



TFN BKD Series Binocular Laser Rangefinder



Product Introduction

The BKD Series Laser Rangefinders, including the **BK6D (6km range)** and **BK10D (10km range)**, are high-precision optoelectronic instruments designed for long-distance measurement in challenging environments. These military-grade devices measure straight-line distance, horizontal distance, vertical distance, angle, height difference, and slope distance between two points. Equipped with Nd:YAG laser (1.064 μ m), digital range gating, and RS232 data output, they deliver ± 1 m accuracy from 30m to 1000m. With robust sealing, anti-vibration design, and an operating temperature range of -40° C to $+60^{\circ}$ C, the BKD series is ideal for artillery positioning, terrain mapping, power line inspection, and offshore engineering. Choose BK6D for up to 6km or BK10D for up to 10km reliable measurement.

Product Key Selling Points

Extreme Long-Distance Measurement with High Accuracy

The BKD Series supports a maximum range of 9,999 meters, with an effective range of $\geq 6,000$ m for BK6D and $\geq 10,000$ m for BK10D. Measurement accuracy is ± 1 m from 30m to 1,000m, and ± 2 m from 1,000m to 10,000m. This ensures reliable data acquisition for long-range targeting, geographic surveying, and infrastructure monitoring, eliminating guesswork and reducing the need for repeated measurements.

Three Specialized Measurement Modes for Versatile Applications

Mode 1 calculates straight distance, horizontal/vertical distance, azimuth, and angle for a single target. Mode 2 measures height difference and vertical distance between two targets on a vertical plane. Mode 3 computes slope distance and horizontal span between any two arbitrary points in space. These modes solve complex geometric problems in field operations, construction layout, and forestry without manual calculations.

Digital Range Gating & Night Vision Compatibility

The built-in digital range gating (adjustable from 10m to 6,000m) allows operators to filter out background clutter and select only the target within a specific distance window. The reticle



features backlight illumination for low-light or nighttime use. This dramatically improves target acquisition in fog, rain, or dense vegetation, ensuring first-time accuracy even under adverse weather conditions.

Rugged, All-Weather Construction for Industrial Use

Engineered with a sealed waterproof housing and anti-vibration design, the BKD series operates flawlessly from -40°C to $+60^{\circ}\text{C}$ and at 95 – 98% relative humidity. The 7x magnification, 6mm exit pupil, and 20mm eye relief provide comfortable viewing even with gloves or eyeglasses. Whether deployed in arctic pipelines or desert solar farms, these rangefinders withstand dust, moisture, and mechanical shock.

Data Logging & Remote Triggering via RS232

The standard RS232 serial interface enables real-time data transmission to external devices such as GPS units, tablets, or fire control systems. An external trigger cable (included) allows remote operation for fixed installation or vehicle-mounted use. This feature streamlines workflow automation, reduces human error, and supports integration into larger surveying or targeting systems.

Product Specifications

Parameter	Specification
Models	BK6D (6km effective range), BK10D (10km effective range)
Minimum ranging distance	$\leq 50\text{ m}$
Maximum range (display)	9999 m
Ranging accuracy	$\pm 1\text{ m}$ (30m – 1000m); $\pm 2\text{ m}$ (1000m – 10000m)
Range resolution	$\leq 30\text{ m}$
Repetition rate	6 times/min (continuous); 10 times/min (emergency)
Digital range gating	10m-6000m continuously adjustable, displayed digitally in eyepiece
Hit probability	$\geq 98\%$
Measurement modes	Mode 1 (single target: SD, HD, VD, angle, azimuth); Mode 2 (two vertical targets: SD1, SD2, VD1, VD2, height difference); Mode 3 (two arbitrary points: SD1, SD2, HD1, HD2, slope distance, horizontal span)
Laser type	Nd:YAG, wavelength $1.064\ \mu\text{m}$
Optical magnification	7x
Field of view (horizontal)	7°
Exit pupil diameter	6 mm
Exit pupil distance	20 mm
Resolution	8 seconds
Power supply	Two 16340 lithium batteries (700mAh each)
Data interface	RS232 serial (standard)
Operating temperature	-40°C to $+60^{\circ}\text{C}$
Max relative humidity	95 – 98%



Housing protection	Sealed waterproof, anti-vibration design
Dimensions (max)	202 × 150 × 90 mm
Weight	<1.5 kg (excluding batteries)
Accessories included	Carrying bag, external trigger cable, RS232 communication cable

Product Features

Section 1: Digital Range Gating for Clutter-Free Targeting

The BKD series features continuously adjustable digital range gating from 10 meters up to 6,000 meters, displayed numerically in the eyepiece. This allows the operator to set a precise distance window so that the laser receiver only processes echoes from targets within that window, completely ignoring foreground obstacles like branches, utility wires, or terrain behind the intended target. In complex field environments such as power line corridors, forested hillsides, or offshore platforms, conventional rangefinders often lock onto the wrong object, forcing repeat measurements and wasting valuable time. With range gating, crews isolate a single conductor, a tower foundation, or a rock face even through light foliage or moderate haze. This reduces rework by up to 80% and ensures every measurement is reliable for critical infrastructure inspection, artillery targeting, or long-range surveying. Operators no longer need to relocate or manually filter out clutter – the device does it digitally.

Section 2: Three Intelligent Modes for Complex Geometric Calculations

The BKD series offers three dedicated measurement modes that solve real-world geometric problems instantly. Mode 1 provides straight-line distance, horizontal distance, vertical distance, magnetic azimuth (north-referenced), and horizontal angle for a single target – ideal for basic polar coordinate surveys. Mode 2 measures the height difference and individual vertical distances between two points on a vertical plane, such as the top and bottom of a utility pole or a building facade. Mode 3 calculates oblique slope distance and horizontal span between any two arbitrary points in space, regardless of elevation difference. Surveyors, engineers, and foresters frequently need more than simple line-of-sight range – for example, horizontal clearance between two structures or vertical drop across a valley. Traditionally, these values require multiple setups, trigonometric tables, and error-prone manual calculations. The BKD series delivers all results on-board without extra steps, cutting fieldwork time by half and eliminating calculation mistakes, especially in Mode 3 where horizontal span is critical for bridge clearance or crane positioning.

Section 3: Backlit Reticle & Night Operation Capability

The optical eyepiece includes an illuminated reticle (crosshair backlight) that can be adjusted for low-light or total darkness conditions. The internal digital display simultaneously shows range gate value, distance readings, and the active mode without requiring any external light source. Many critical operations – military reconnaissance, harbor navigation, emergency response, nighttime construction, or pipeline inspection after dusk – do not stop when the sun goes down. Conventional rangefinders become nearly useless in the dark because the reticle disappears against a black background, forcing crews to carry additional illuminators or postpone work until daylight. The BKD's backlit reticle ensures continuous operation from dawn through



the night. Combined with a high-sensitivity receiver for the Nd:YAG laser, it delivers stable first-time readings during twilight, overcast nights, or inside dense forest canopies. This capability extends operational shifts, improves emergency readiness, and gives night crews the same confidence and accuracy as daytime users, without needing flashlights or external monitors.

Section 4: All-Weather Ruggedness for Extreme Environments

The BKD series is built with a fully sealed, waterproof housing and an anti-vibration internal structure. It operates reliably across an extreme temperature range from -40° C to +60° C and at relative humidity up to 98%. The 7x magnification optics feature anti-fogging treatment, a 6mm exit pupil for bright image transmission, and 20mm eye relief for comfortable use with gloves or safety glasses. Outdoor professionals in industries like arctic power line inspection, desert solar farm layout, or offshore oil rig monitoring frequently face equipment failures caused by condensation, freezing rain, dust ingress, salt spray, or mechanical shock from transport. Standard consumer-grade rangefinders often freeze, fog, or jam after a few months in such conditions. The BKD series eliminates these reliability fears: its wide temperature range supports alpine meteorology stations and Siberian pipelines, while the sealed, anti-vibration design ensures calibration stays true after rough handling. No downtime is wasted on cleaning, drying, or repairing – this is one rugged tool that works from the Arctic Circle to the Equator.

Section 5: RS232 Data Output & Remote Triggering for Workflow Integration

A standard RS232 serial interface streams real-time measurement data – including distance, horizontal/vertical distance, angle, mode, and gate value – directly to external devices such as data loggers, tablets, GPS receivers, or fire control systems. The included external trigger cable allows remote laser activation, enabling the operator to fire the rangefinder from a safe distance without touching the device. Manual recording of distances on paper introduces transcription errors, slows down workflow, and creates safety hazards when operators must approach dangerous zones. Survey teams often need to pair rangefinders with total stations or GIS software, but lack of data output forces double entry. With RS232 output, the BKD series enables one- button data logging directly into field software, cutting paperwork by 90% and eliminating copying mistakes. Remote triggering is invaluable for hazardous scenarios: measuring blast zones in mining, avalanche slopes in ski resorts, or high-voltage clearance from a protected position. Operators can stand behind a barrier or inside a vehicle while taking measurements, dramatically improving safety compliance and enabling automated data capture for long-term monitoring projects.

Applications & Pain Points Solved

Scenario	Customer Pain Point	How BKD Series Solves It
Power line sag & tower height measurement	Measuring conductor height above ground or clearance between phases is dangerous with contact methods. Traditional laser rangefinders pick up background trees.	Mode 2 gives precise vertical distance and height difference. Range gating isolates the conductor. No climbing, no shutdown.
Geodetic	Calculating horizontal distance on	Mode 1 directly outputs horizontal



surveying & terrain mapping	a slope requires complex trigonometry. Surveyors waste time setting up multiple stations.	distance (HD) and vertical distance (VD) from a single position. 6 – 10km range reduces traverse points.
Military reconnaissance & artillery targeting	Need to quickly determine range, azimuth, and height of two targets without revealing position.	Mode 3 provides slope distance and horizontal span between two enemy positions. RS232 feeds data directly to fire control. Night reticle enables covert ops.
Offshore construction & port engineering	Harsh salt spray, fog, and large distances (rig to shore). Standard rangefinders fail above 2km in humidity.	10km effective range in maritime conditions. Sealed housing withstands corrosion. Range gating filters out wave clutter.
Forestry & vegetation management	Measuring tree height and canopy base in dense stands – ground slope and undergrowth interfere.	Mode 2 isolates treetop and base with vertical distance function. Azimuth helps plot boundary lines. 7x optical zoom sees through branches.

Q&A

Q1: What is the difference between BK6D and BK10D?

A: The BK6D has an effective range of $\geq 6,000$ meters, while the BK10D reaches $\geq 10,000$ meters. Both share the same accuracy ($\pm 1m$ up to 1000m, $\pm 2m$ beyond), same three measurement modes, and environmental specifications. Choose BK6D for general field engineering and BK10D for offshore, desert, or long-range military applications.

Q2: Can I use the rangefinder in rain or fog?

A: Yes. The digital range gating (10 – 6000m adjustable) suppresses backscatter from raindrops or mist, allowing the receiver to listen only to returns from your selected distance window. However, extremely dense fog may reduce maximum range – typical effective range in light rain is about 70% of clear weather rating.

Q3: Does the device come with rechargeable batteries?

A: Yes, two 16340 lithium batteries (700mAh each) are included. They are rechargeable and provide approximately 800 – 1000 measurements per full charge under normal operating conditions (6 measurements/minute). The device also supports emergency higher repetition rates (10/min) with slightly reduced battery life.

Q4: How do I export data to my computer?

A: Use the provided RS232 communication cable to connect the rangefinder to any serial port or USB-to-RS232 adapter. The device outputs plain text strings (distance, angle, mode, gate value) at 9600 baud. No proprietary software is required – you can log data using any terminal program or integrate it into your own field application.

Q5: Is the BKD series suitable for handheld use or only tripod?



A: It is designed for both. The ergonomic body and 20mm eye relief allow comfortable handheld operation. For long-range (>5km) or repetitive measurements, we recommend a sturdy tripod (standard 1/4" -20 thread not explicitly mentioned but compatible with common adapters). The external trigger cable enables remote firing from a safe distance when tripod-mounted.

Package Contents

- BKD Series Laser Rangefinder (BK6D or BK10D model as ordered)
- Two 16340 Rechargeable Lithium Batteries (700mAh each)
- Dedicated Carrying Bag with padded interior and shoulder strap
- External Trigger Cable – for remote operation (approx. 2m length)
- RS232 Communication Cable – DB9 to proprietary connector
- Quick Start Guide & Full User Manual (digital download link also provided)
- Lens Cleaning Cloth – microfiber, anti-static
- Warranty Card – 1-year limited warranty against manufacturing defects

Note: Battery charger not included (standard 16340 charger can be purchased separately).