

LASER SENSORS & RANGING MODULES

Industrial measurement | OEM integration | 3D vision



INDUSTRIAL SENSORS



OEM RANGING



3D DEPTH CAMERAS

Distance. Depth. Integration.

A selected portfolio for machine builders, automation projects and measurement equipment.

Shenzhen Tianzhiyi Technology Co., Ltd.

www.tianzhiyitech.com

PORTFOLIO GUIDE

Select by the measurement task

Single-point distance sensing and 3D depth imaging are separate product categories.

01	Industrial laser distance sensors Enclosed sensors for machines and fixed installations.	03-05
02	Precision & short-range OEM modules Compact modules for integration into measuring equipment.	06-07
03	Long-range OEM modules Single-point laser ranging for outdoor and equipment projects.	08-11
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SPECIFICATION KEY

D denotes measured distance. Slash-separated values indicate different configurations, not a guaranteed simultaneous operating point. Range depends on target reflectivity, ambient light and the selected measuring mode.

01 / INDUSTRIAL LASER DISTANCE SENSORS

Enclosed distance sensing

Long-distance measurement in enclosed formats.

TZY-LD101

Enclosed laser distance sensor



Enclosed format for fixed distance measurement and equipment integration.

Interface, supply voltage and housing rating must be specified with the order.

Range options	0.03-100 / 150 / 200 m
Frequency options	3 / 10 / 20 / 30 Hz
Accuracy	$\pm(3 \text{ mm} + D \times 0.01\%)$
Light options	Red / green
Dimensions	85 x 62 x 22 mm
Weight	90 g

TZY-LD102

Enclosed laser distance sensor



Larger enclosed format for fixed installations and monitoring projects.

Interface and environmental configuration are selected by application.

Range options	0.03-100 / 150 / 200 m
Frequency options	3 / 10 / 20 Hz
Accuracy	$\pm(3 \text{ mm} + D \times 0.01\%)$
Light options	Red / green
Dimensions	122 x 84 x 37 mm
Weight	446 g

01 / INDUSTRIAL LASER DISTANCE SENSORS

Compact precision sensing

Choose the accuracy, range and interface required by the installation.

TZY-LD103 / TZY-LD104

Compact precision distance sensor



Compact format for machine builders requiring millimetre-level distance measurement.

Range options	0.03-60 / 100 m
Frequency options	3 / 50 / 100 Hz
Accuracy	$\pm(1 \text{ mm} + D \times 0.01\%)$
Light options	Red / green
Dimensions	68 x 42 x 17 mm
Weight	50 g

Range and frequency options depend on the selected configuration.

TZY-LD105 / TZY-LD106

General-purpose distance sensor



General-purpose platform for fixed distance monitoring and OEM equipment.

Range options	0.03-100 / 150 / 200 m
Frequency options	3 / 10 / 20 / 30 Hz
Accuracy	$\pm(3 \text{ mm} + D \times 0.01\%)$
Light options	Red / green
Dimensions	85 x 62 x 22 mm
Weight	90 g

Specify the exact light colour, interface and measuring mode.

01 / INDUSTRIAL LASER DISTANCE SENSORS

High rate & extended range

Different platforms for fast short-range measurement and longer-range sensing.

TZY-LD107

High-frequency distance sensor



Short-range platform with high measurement-rate options for moving processes.

Validate the required rate and accuracy together on the actual target.

Range	0.2-25 m
Frequency options	100 / 1000 / 3000 Hz
Accuracy	$\pm(3 \text{ mm} + D \times 0.01\%)$
Light	Red
Dimensions	109 x 40 x 18 mm
Weight	170 g

TZY-LD108

Long-range distance sensor



Housed long-range sensing platform for equipment and outdoor monitoring projects.

Maximum range and maximum frequency are not assumed to be simultaneous.

Range options	0.5-400 / 700 / 1100 m
Frequency options	3 / 200 / 500 Hz
Accuracy	$\pm 1 \text{ m}$
Wavelength	905 nm
Dimensions	80 x 65 x 32 mm
Weight	188 g

02 / PRECISION OEM MODULES

Miniature precision modules

Low-profile modules for compact measurement equipment.

TZY-LM101

Miniature precision ranging module



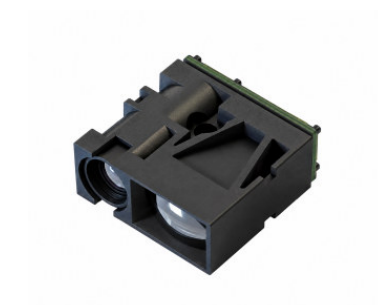
Low-profile module for integration into compact measurement equipment.

Confirm range variant, interface and power requirements before integration.

Range options	0.03-50 / 100 / 150 m
Frequency options	4 / 50 / 100 Hz
Accuracy	$\pm(1 \text{ mm} + D \times 0.01\%)$
Light	Red / green options
Dimensions	27.87 x 17.03 x 7.01 mm
Weight	3 g

TZY-LM102

Miniature precision ranging module



Low-profile module for integration into compact measurement equipment.

Confirm range variant, interface and power requirements before integration.

Range options	0.03-50 / 100 / 150 m
Frequency options	4 / 50 / 100 Hz
Accuracy	$\pm(1 \text{ mm} + D \times 0.01\%)$
Light	Red
Dimensions	16.57 x 17.03 x 7.01 mm
Weight	2 g

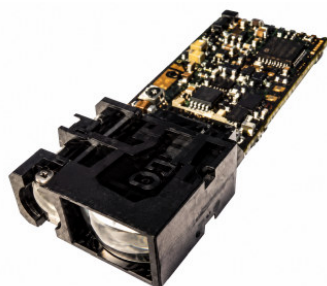
02 / SHORT-RANGE OEM MODULES

Short-range laser ranging

Two compact options with different accuracy and measuring-rate characteristics.

TZY-LM103

Short-range laser ranging module



Compact visible-light module for indoor and semi-outdoor measuring equipment.

Measurement time is not a fixed sampling rate.

Range	0.03-20 m
Accuracy	$\pm(1.5 \text{ mm} + D \times 0.05\%)$
Measurement time	0.1-4 s
Wavelength	620-690 nm
Interface	UART
Supply	DC 2.5-3.3 V
Dimensions	$\leq 42 \times 17.2 \times 7.1 \text{ mm}$
Weight	$\leq 5 \text{ g}$
Temperature	-20 to +50 °C

TZY-LM104

Compact 40 m ranging module



Narrow-field module with temperature compensation and reflectivity correction.

Confirm the operating wavelength and final laser classification.

Range	0.1-40 m
Accuracy, 0.1-5 m	$\pm 3 \text{ cm}$
Accuracy, above 5 m	1% of distance
Frame rate	100 fps
Field of view	$< 2^\circ$
Interface / supply	UART / 5 V
Dimensions	$\leq 23.2 \times 22 \times 17 \text{ mm}$
Weight	$\leq 10 \text{ g}$
Temperature	-20 to +50 °C

03 / LONG-RANGE OEM MODULES

Compact long-range modules

Select against the actual target size, reflectivity and ambient light.

TZY-LM105

Ultra-compact long-range module



Lightweight OEM module for compact distance measurement systems.

Range	0.1-1200 m
Accuracy, D ≤400 m	±1 m
Accuracy, D >400 m	±0.4% of D
Wavelength	905 nm
Interface	UART, TTL 3.3 V
Supply	DC 3-5 V
Average power	≤450 mW
Dimensions	≤10.2 x 16.5 x 25.2 mm
Weight	6.5 ±0.5 g

Measuring-rate notation in the source requires confirmation.

TZY-LM106

1000 m laser ranging module



Compact OEM module for long-distance measurement and equipment integration.

Range	5-1000 m
Accuracy	±1 m
Measuring frequency	≤4 Hz
Wavelength	905 nm
Interface	UART, TTL 3.3 V
Supply	DC 3-5 V
Dimensions	≤25.8 x 24.6 x 12.9 mm
Temperature	-20 to +60 °C

Range follows the detailed English model table.

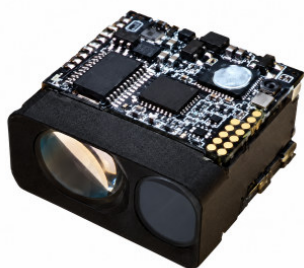
03 / LONG-RANGE OEM MODULES

1500 m & 2000 m platforms

Nominal measuring ranges are shown for model comparison.

TZY-LM107

Long-range dToF module



Small-form-factor dToF module for long-distance OEM measurement systems.

Nominal range	10-1500 m
Accuracy, D ≤400 m	±1 m
Accuracy, D >400 m	±0.4% of D
Wavelength	905 nm
Interface	UART, TTL 3.3 V
Supply	DC 3-5 V
Average power	≤600 mW
Dimensions	≤24.6 x 13.55 x 25.72 mm
Temperature	-30 to +60 °C

Nominal range shown; extended-range claims are not used. Measuring rate is configuration-dependent.

TZY-LM108

Long-range dToF module



Small-form-factor dToF module for long-distance OEM measurement systems.

Nominal range	10-2000 m
Accuracy, D ≤400 m	±1 m
Accuracy, D >400 m	±0.4% of D
Wavelength	905 nm
Interface	UART, TTL 3.3 V
Supply	DC 3-5 V
Average power	≤600 mW
Dimensions	≤24.6 x 13.55 x 25.72 mm
Temperature	-30 to +60 °C

Nominal range shown; extended-range claims are not used. Measuring rate is configuration-dependent.

03 / PULSED LASER RANGING MODULES

Compact pulsed ranging

Rectangular and cylindrical formats for OEM equipment.

TZY-LM109

Pulsed laser ranging module



OEM module for surveying, outdoor measurement and equipment integration.

Range options	5-1500 / 2000 m
Frequency options	2 / 5 / 100 Hz
Accuracy	±1 m
Wavelength	905 nm
Dimensions	25.72 x 24.6 x 13.4 mm
Weight	10 g

Range and frequency options require confirmation for the selected target and variant.

TZY-LM110

Pulsed laser ranging module



OEM module for surveying, outdoor measurement and equipment integration.

Range options	3-1000 / 1500 m
Frequency options	2 / 5 / 100 Hz
Accuracy	±1 m
Wavelength	905 nm
Dimensions	Ø25 x 42.87 mm
Weight	18 g
Indicator options	Red / green

Range and frequency options require confirmation for the selected target and variant.

03 / LONG-RANGE OEM MODULES

Extended range & indicators

Select a longer-distance platform or an integrated visible indicator.

TZY-LM111

Pulsed laser ranging module



OEM module for surveying, outdoor measurement and equipment integration.

Range options	5-1500 / 3000 m
Frequency options	3 Hz
Accuracy	±1 m
Wavelength	905 nm
Dimensions	92 x 54 x 33 mm
Weight	66 g

Range and frequency options require confirmation for the selected target and variant.

TZY-LM112

Compact module with laser indicator



Compact ranging module with a visible aiming indicator for OEM integration.

Nominal range	0.2-1200 m
Accuracy, $D \leq 100$ m	±0.5 m
Accuracy, $100 < D < 1200$ m	±(0.5 m + D x 0.075%)
Wavelength	905 ±5 nm
Measuring frequency	4-15 Hz
Supply	DC 3.3-5 V
Dimensions	14.0 x 18.0 x 22.3 mm
Indicator options	Red / green

Confirm communications protocol, sealing configuration and final variant.

04 / COMPACT OEM MODULE ALTERNATIVES

Rectangular module options

Compact alternatives for OEM distance measurement.



TZY-LM113

Max. range / options: 1500 m

Average power: 0.75 W

Dimensions: 25.65 x 13.2 x 24.6 mm



TZY-LM114

Max. range / options: 1200 m

Average power: ≤ 0.45 W

Dimensions: 23.44 x 25.6 x 14.2 mm



TZY-LM115

Max. range / options: 1200 m

Average power: Approx. 0.45 W

Dimensions: 7.2 x 14.7 x 21.3 mm



TZY-LM112

Max. range / options: 1200 m

Average power: Approx. 0.45 W

Dimensions: 14.0 x 18.0 x 22.3 mm



TZY-LM116

Max. range / options: 600 / 800 / 1000 m

Average power: Approx. 0.45 W

Dimensions: 7.7 x 16.7 x 30.6 mm

Maximum ranges are model- and target-dependent. Dimensions retain the source notation; confirm the complete mechanical drawing, interface, accuracy and sealing specification.

04 / COMPACT OEM MODULE ALTERNATIVES

Cylindrical module options

Round-front and compact optical packaging options.

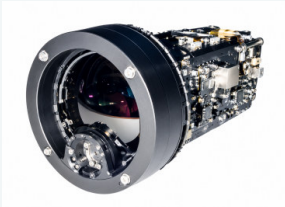


TZY-LM117

Max. range / options: 1500 m

Average power: 0.75 W

Dimensions: 23 x 46.9 mm



TZY-LM118

Max. range / options: 1200 m

Average power: 0.75 W

Dimensions: 25 x 46.1 mm

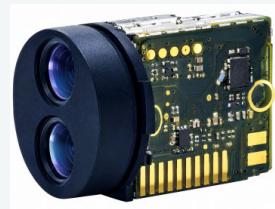


TZY-LM119

Max. range / options: 1200 m

Average power: 0.45 W

Dimensions: 18.5 x 18.5 x 31.3 mm



TZY-LM120

Max. range / options: 1200 m

Average power: 0.45 W

Dimensions: 15.1 x 21.3 mm



TZY-LM121

Max. range / options: 1200 m

Average power: 0.45 W

Dimensions: 18.1 x 21.3 mm

Maximum ranges are model- and target-dependent. Dimensions retain the source notation; confirm the complete mechanical drawing, interface, accuracy and sealing specification.

05 / 3D VISION - RELATED PRODUCT LINE

Compact 3D depth cameras

iToF depth imaging for robot perception and measurement projects.

TZY-VC101

Compact iToF 3D depth camera



Compact depth-imaging platform for close-range robot perception.

Depth range, 10% target	0.3-2 m
Depth range, 90% target	0.2-4 m
Depth resolution	640 x 480 / 320 x 240
Depth frame rate	5 / 20 fps respectively
Depth field of view	64° x 50°
Accuracy	1% across range
Supply	12-24 V
Dimensions	85 x 26.5 x 25.05 mm

3D vision product; shown separately from single-point laser ranging.

TZY-VC102

iToF 3D depth camera



Depth camera for robot perception, pallet recognition and dimensioning projects.

Depth range, 10% target	0.2-5 m
Depth range, 90% target	0.2-8 m
Depth resolution	640 x 480 / 320 x 240
Depth frame rate	5 / 20 fps respectively
Depth field of view	64° x 50°
Accuracy	0.5% across range
Supply	18-24 V
Dimensions	83 x 67.5 x 42 mm

Application algorithms and RGB configuration are selected separately.

05 / 3D VISION - RELATED PRODUCT LINE

Wide-field industrial cameras

Spatial perception and area monitoring with wider fields of view.

TZY-VC103

Wide-field 3D depth camera



Wide-field depth imaging for robot perception and area monitoring.

Depth range	0.2-10 m
Target reflectivity	10% / 90% as listed
Depth resolution	640 x 480 / 320 x 240
Depth frame rate	5 / 20 fps respectively
Depth field of view	105° x 75°
Accuracy	1% across range
Supply	20-24 V
Dimensions	84 x 73 x 35 mm

Confirm environmental rating, interface implementation and algorithm package.

TZY-VC104 / TZY-VC105

Industrial 3D depth camera



Industrial depth-imaging family with multiple integration interfaces.

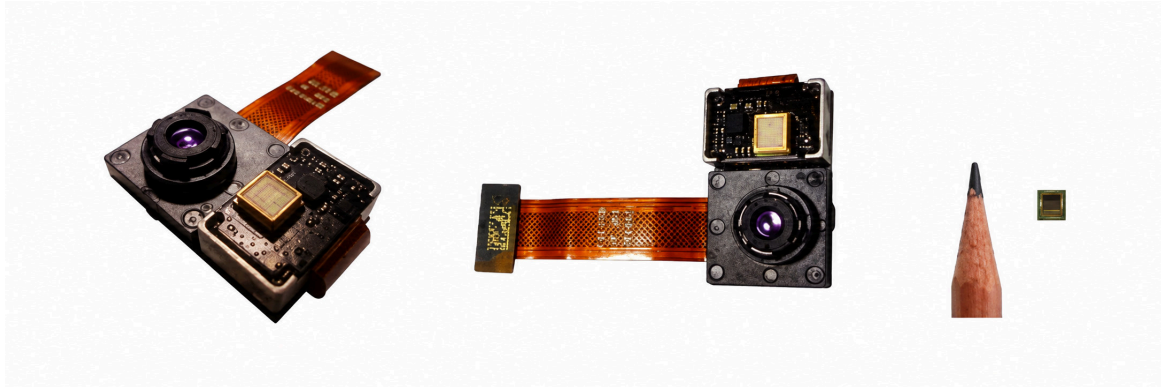
Depth range, 10% target	0.3-7 m
Depth range, 90% target	0.3-10 m
Depth resolution	640 x 480 / 320 x 240
Depth frame rate	25 fps at either resolution
Depth field of view	105° x 75°
Interfaces	GbE, DI/DO, RS485
Supply	18-36 V
Dimensions	130 x 70 x 60 mm

Shared family specifications; confirm the exact model configuration. No functional-safety rating is implied.

Embedded depth sensing

TZY-VM101 provides an embedded iToF option for custom vision equipment.

TZY-VM101



Pixel array	640 x 480
Depth frame rate	Up to 60 fps, 4-phase mode
Phase-image frame rate	Up to 240 fps
Field of view	64° x 50°
Range condition	3 m outdoors, 18% target
Accuracy	1% across range
Data interface	MIPI CSI-2, 2 lanes
Control interface	I2C; SPI for VCSEL driver
Wavelength options	940 / 850 nm
Modulation frequency	Configurable, up to 165 MHz

Chip package dimensions are not module dimensions. Confirm complete module drawing, power rails and SDK.

APPLICATION GUIDE

From product to integration

Specify the measurement task before choosing a model or requesting a quotation.

Machine distance & position

Start with TZY-LD103 / TZY-LD104 or TZY-LD101. Compare required accuracy, response time and the available controller interface.

Fast moving targets

Evaluate TZY-LD107 for short-range measurement-rate requirements. Validate performance at the chosen rate on the real surface.

Compact measuring equipment

Compare TZY-LM101 / TZY-LM102, TZY-LM103 and TZY-LM104 according to accuracy, blind zone, size and power budget.

Long-distance measurement

Compare TZY-LM105 / TZY-LM108, TZY-LM109, TZY-LM111 and the TZY-LM112 to TZY-LM121 module families using the same target and light conditions.

Robot perception & dimensioning

Evaluate TZY-VC101 / TZY-VC102 / TZY-VC103 for depth imaging; define field of view, target reflectivity, working distance and algorithm needs.

SEND YOUR REQUIREMENTS

Working distance and target size; required accuracy and measuring rate; target colour / reflectivity; indoor or outdoor conditions; interface and supply; installation space; sample and production quantities.

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