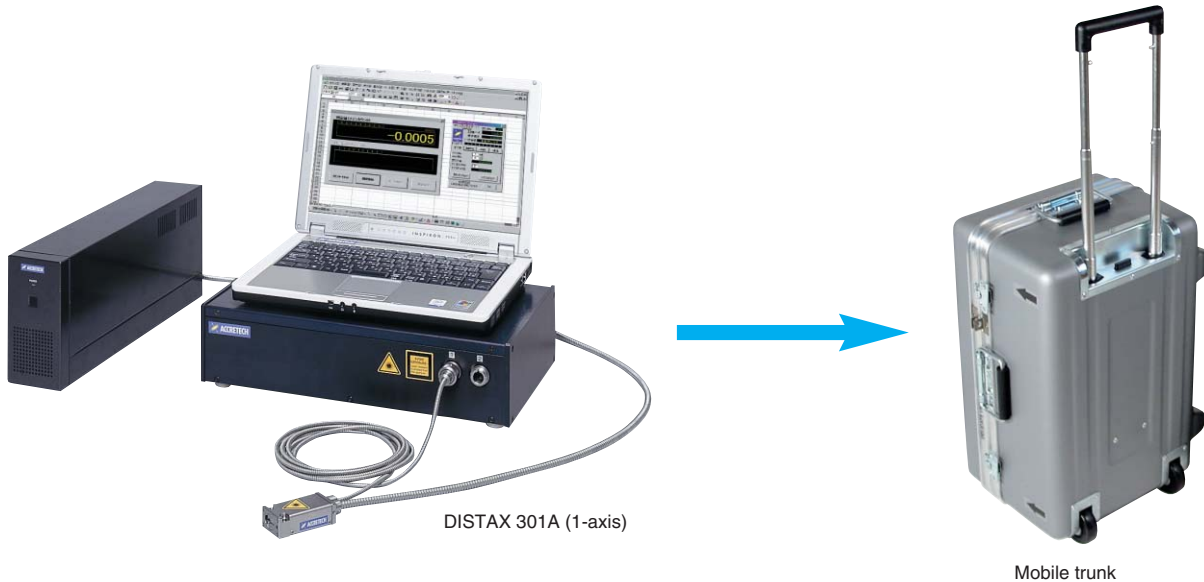


Laser Interferometer with Optical Fiber

DISTAX 300A



DISTAX 301A (1-axis)

Mobile trunk

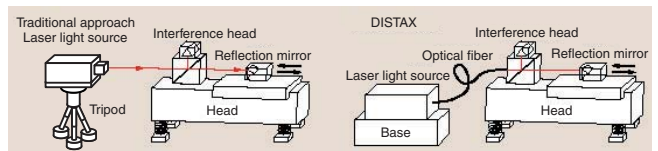
Features

For machine tool inspection

- Easy setup
Optical fiber coupler type compact interferometer optical head allows free layout.
3-axis interference head eliminates the need for setup changes.
- Full automatic measurement
Computer-based automatic machine tool operation
Full automatic NC error correction, ISO full automatic measurement and report output
- Easy portability
Tripod not required
Carrying case allows easy transport to site when measurement is required.

General Measurement










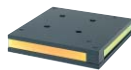





- X-Y stage
- Angle, straightness



Even if movement of the stage causes inclination of the stage, errors will not be generated.

		Name	Specification	Product Codes	Remarks
Standard system		Laser interferometer	L-IM-301-02	903130	1-axis 5 m fiber/ LI-02A length measurement interference head
Data processor	Hardware	Notebook computer	IBM	4303575	For Windows XP (with level indicator function)
		Extension box	ECH-(PCI)BE-F2B	4500182	
	Software	DISTAX Manager		4500118	
		NC error measurement program		4500119	
		ISO measuring program		4500120	
Option		Data Link Software		4500171	
		Remote controller	RM-301	903390	With level meter
		Remote controller cable		903400	
		Environment sensor	LA-02,LS-02B	903411	
		Material temperature sensor	LM-01	903420	
		Environment sensor I/O board	PCI-2753 (16/16 DIO)	4300452	
		Environment sensor interface cable	CAB-5110	4300453	
		Reflection mirror installation hardware	US-140	818863	
		Printer	Inkjet printer	4500224	
		Printer cable	IFC-USB/18	4281074	USB type

Machine Tool Auto Measuring System/X-Y Stage Measuring System Configuration

Item	Machine tool measurement system L-IM-301-02	Machine tool measurement system L-IM-301-02-3D	Machine tool measurement system L-IM-301-52	X-Y stage measurement system L-IM-301-22	X-Y stage measurement system L-IM-301-62
Product code	903130	4500156	4500157	4500158	4500320
Laser head power source					
Interference head	 LI-02A length measurement interference head	 LI-40A 3-axis head interference head	 LI-02F 2-axis head	 L1-02B plane mirror head	 L-04A ultra-compact length measuring head
Reflection mirror	 Corner cube φ20mm/1 ea.	 Corner cube φ20mm/3 ea.	 Corner cube φ10mm/2 ea.	 Plane mirror (order made).	 Corner cube φ10mm
Optical fiber	 5-meter send and receive/1 ea. (Three types available: 3-meter, 5-meter, 10-meter)				
Option	 For tight areas Up/down travel: 40 mm Up/down, left/right angle ±3° Interference head translation stage (tight area) U-758		 Reflection mirror installation hardware U-140		 General Up/down travel: 50mm Left/right travel: 50mm Up/down, left/right angle ±3° Interference head translation stage (general) U-680
	Software			Data Link Software	Data Link Software
	PC				
Measurement range resolution	<10m 5nm	<5m 5nm	<10m 5nm	<5m 2.5nm	<4m 10nm
System accuracy	±0.1p.p.m				
Description	Supports auto 1-axis machine tool measurement. Setup change is required for each axis measurement. This is the most basic system.	Supports auto 3-axis machine tool measurement with automatic sequential optical axis switching. Setup change of each axis is not required. Provides full automatic measurement.	Supports measurement with replacement of corner cubes of each X-Y stage axis. Best when the X-Y ball screw is split between the upper and lower level.	Ideal for attaching a plane mirror to the side of the X-Y stage. Does not use a corner cube.	Due to its ultra-compact size, effective for measuring fine movement stages on which weights cannot be loaded.

2-axis Simultaneous Measurement

Possible by just a single laser.

Combinations of length, angle and straightness also can be measured.

Data can be input directly to Excel using Data Link software.



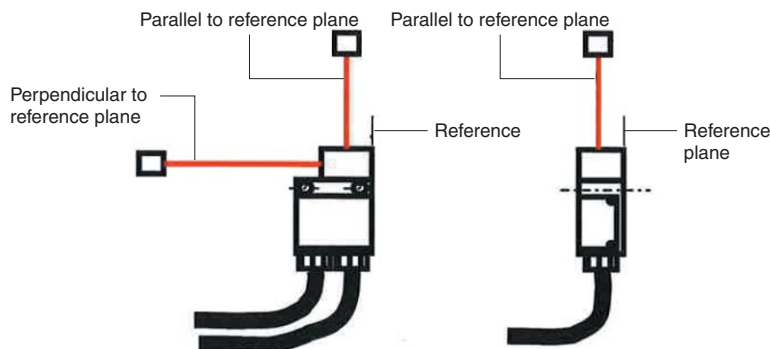
2-axis Interference Head LI-02F Features

Optical axis that is parallel and perpendicular to the interferometer reference plane



Special jig not required

Alignment not needed with reflected plane referenced



Machine Tool Automatic Measuring System with Optical Fiber Coupling Laser Interferometer

Full automatic measurement system

- This system uses a 3-axis head and DISTAX Manager software for machine tool compensation and ISO standard measurement and inspection (230-2) that is fully automatic and is performed at the fastest speeds available.

<3-axis head>

The beam can switch automatically between the X, Y, and Z axes in sync with measurement.

Since each of the optical axes is perpendicular, a single setup during installation on the machine tool centers the X, Y, and Z axes, which saves time.

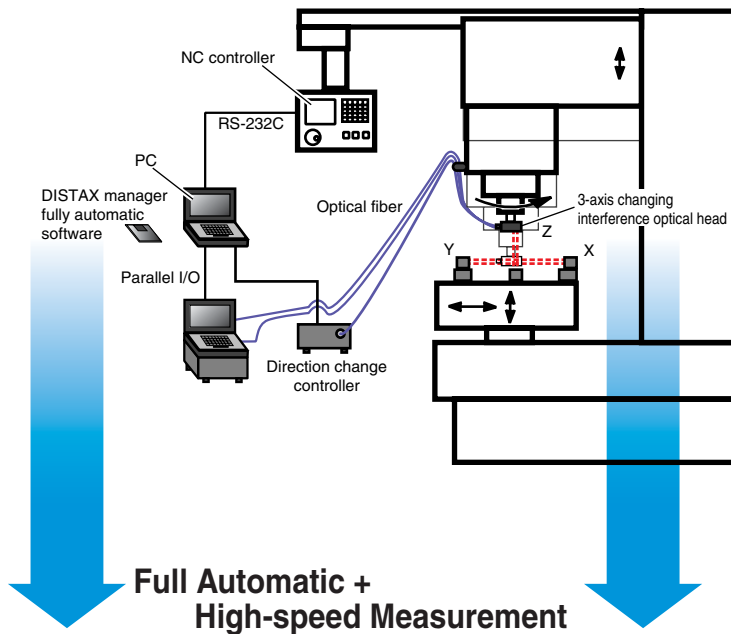
<DISTAX Manager>

DISTAX Manager downloads correction parameters from the machine tool NC device, automatically operates the machine tool based on the downloaded parameters, judges stops and performs automatic measurement, automatically sends correction values to the NC device, and even automates ISO standard inspection and printing of inspection reports.

A machine registration function lets you record measurement conditions, which cuts down on troublesome inputs.

- Fully compliant with ISO 230-2 1988/1997

- The number of required tasks is dramatically reduced (reduces 3-axis average measurement time by 80%), which helps to avoid correction value input error.



● DISTAX Manager Software

- Stage movement G-code generation for measurement
- Automatic correction
- ISO standard based inspection and result report printout

● 3-axis head (LI-40A)

Compact 3-axis measuring head (LI-41A)



Shows its performance in tight areas such as small-size machine tools and transfer machines.



LI-40A



Corner cube



Reflection mirror hardware U-140

3-axis centering with a single setup

DISTAX Manager automatically switches the measurement axis.












X-axis

Y-axis

Z-axis

●Option Table

Item	Interference Head	Reflection Mirror	Reflection mirror installation hardware	Software	Measuring Range	Resolution	Accuracy
Angle (pitch and yaw measurement)	 LI-02D Angle measuring head	 Dual corner cubes	 Reflection mirror installation hardware U-140	Angle measurement Pitch and yaw measurement	< 5m angle range ±10°	0.1 second	±0.2%
Straightness	 LI-02E Straightness measuring head	 Straightness kit (reflector prism, polarization prism)	 Reflection mirror installation hardware U-140 Reflector prism installation hardware U-832	Straightness measurement	Polarization prism – Reflector prism distance < 3m Straightness range ±1.5mm	0.1 μm	±0.4 μm/m
Environment sensor	 LA-02	 LS-02	 Object temperature sensor LM-01		Temperature: 0 to 40°C Barometric Pressure: 840 to 1053 hPa Humidity: 0 to 100% RH	Temperature: 0.1°C Barometric Pressure: 0.1 hPa Relative Humidity: 1%	Temperature: ±0.3°C Barometric Pressure: ±4.7 hPa Relative Humidity: ±10%

Specifications

●System

Model	300A
Maximum measuring range	Corner cube: 10 m, Plane mirror: 5m
Optical fiber length	3 m, 5 m, 10 m standard
Resolution	Corner cube: 5nm, Plane mirror: 2.5nm
Maximum response speed	Corner cube: 630mm/s(Special order: 1000 mm/s) Plane mirror: 315mm/s
Accuracy	±(Lx10 ⁻⁷ +0.01x10 ⁻⁶)m L=measuring length(m)
Number of axes	3 max.

●Laser Head

Light source	Stabilized wavelength single mode He-Ne laser
Light output	Approximately 0.3W (per axis)
Wavelength stability	±1x10 ⁻⁷
Number of optical axes	3 max.
Warm-up time	Approximately 10 minutes
Input voltage	Single phase AC 100V ±10%
(PS-300A power supply for laser head)	Frequency 50/60Hz
Power consumption	3-pint AC plug 90 VA
Dimensions and weight	160(W)x455(D)x116(H)mm 7.5kg
Usage environment	Temperature: 10°C to 40°C (±10C temperature variation during operation) Humidity: 10 to 90% (no condensation)

●Counter Board

Maximum response frequency	2.0MHz
Reflection mirror movement speed	Single path interference head: Approximately 630 mm/s (when basic resolution = λ/2) Plane mirror interference head: Approximately 315mm/s (when basic resolution = λ/4)
Maximum count	±233-1
Data output delay time	max. 1 μs
Number of axes	1 axis/1 board

●DISTAX Manager Software

Number of measurement points	Up to 3 axes, measured sequentially
Connection to NC Unit	RS-232C
Types of NC units	FANUC 16, 18, 21 MELDUS 64
Measurement/output content	Full compliance with ISO 230-2 (1988, 1997) Various positioning accuracy inspection items, including average reversing error Various graph outputs Formatted inspection report output
Correction	Pitch error and backlash error. (Automatic correction)
Functions required by NC controller	Programmable parameters (required for automatic correction) Tape operation mode (required for automatic operation of NC from a PC using G-codes) (If this mode is not available, the NC can operate in the memory mode and automatic measurement can be performed using data from the DISTAX counter.)

●Traceability

Public Bodies (International Standards) International Bureau of Weights and Measures (Iodine-stabilized He-Ne Laser)	Public Bodies (International Standards) National Research Laboratory of Metrology (Japan) (Iodine-stabilized He-Ne Laser, Light-speed Laser)	Japan Calibration Service System (JCSS) Class 2 Standards Hachioji Plant, Certified Factory (Iodine-stabilized He-Ne Laser)	Product DISTAX L-IM Series
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