KEYENCE

NEW **High-Accuracy Digital Contact Sensor**
GT2 Series

GT2
Air Push Type

Air push models
for stable operation
with easy mounting.

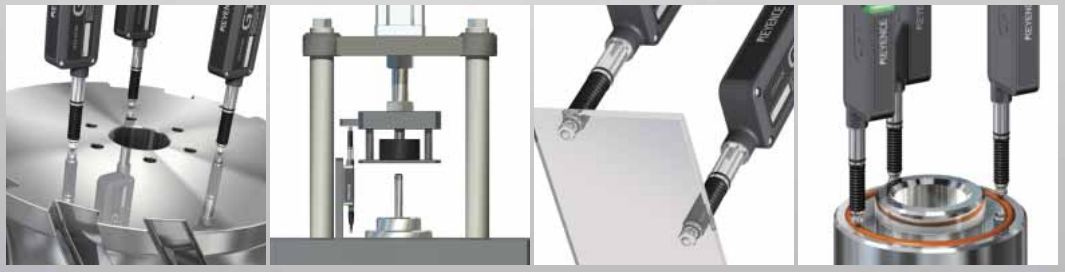
[World's First!]

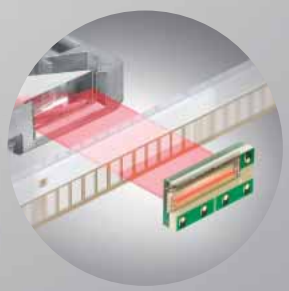
GT2 SERIES

CE c UL us

Revolutionary technology enables high-accuracy measurement

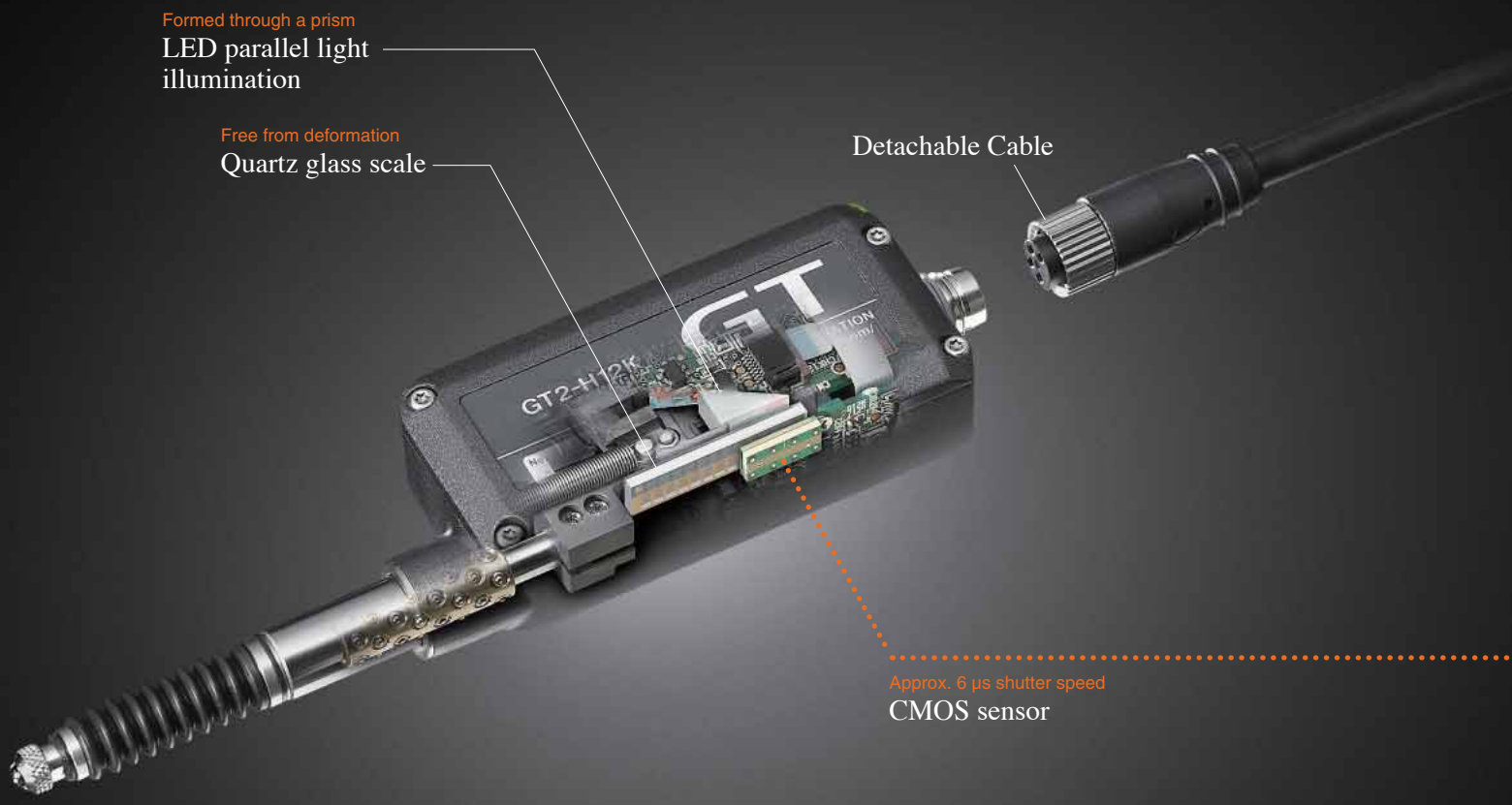
SCALE SHOT SYSTEM





The new GT2 Series provides even higher “error free” accuracy

Adopting the world's first, ground-breaking scale-shot system, the new GT2 Series provides high-accuracy, without speed errors.
KEYENCE's long history of innovation and cutting edge technologies come together in the new GT2 Series.



GT2 SERIES

Advantages of the conventional scale method (pulse counting)

High-accuracy throughout the entire measurement range

Good temperature characteristics

+

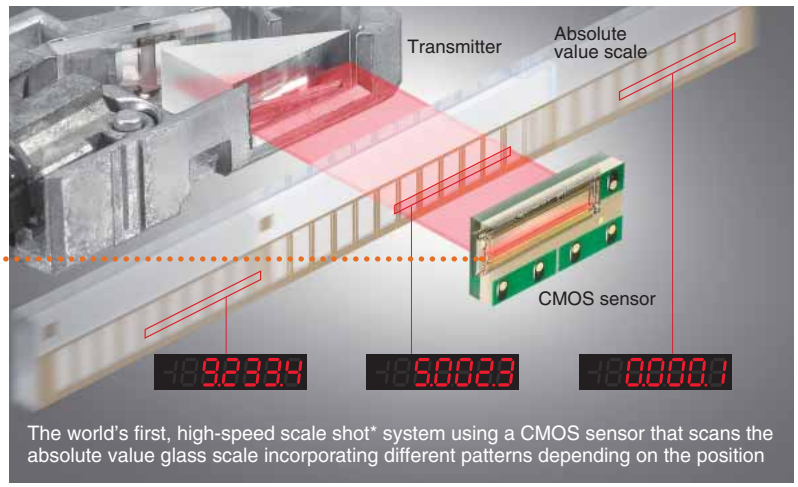
Advantages of the conventional transformer method

No tracking errors

Absolute position detection

KEYENCE introduces new technology **World's first**

SCALE SHOT SYSTEM



The world's first, high-speed scale shot* system using a CMOS sensor that scans the absolute value glass scale incorporating different patterns depending on the position

* Shutter speed: Approx. 6 µs, Sampling interval: 1 ms

Highest accuracy in its class

Absolute system

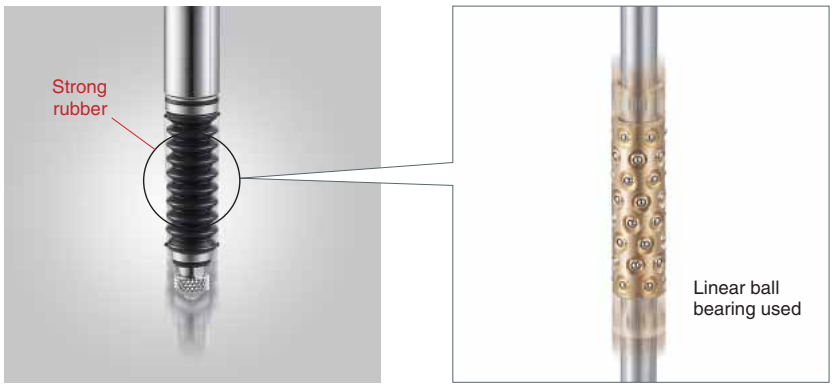
Resolution	Accuracy
0.1 µm 0.004 Mil	1 µm 0.04 Mil

Tough and Rugged

[Maintenance cost reduction]

Long life

Detecting durability: 20 million times*



Linear ball bearings are used for the spindle to ensure a long service life.

* GT2-H12 (L/K/KL), Typical

Water resistant cable

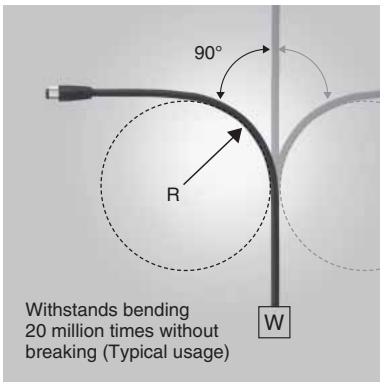
IP67 enclosure rating

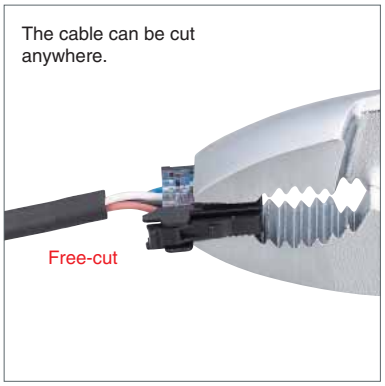
Strength against bending

Flexible free-cut robot cable

The sensor head cable uses a robot cable that withstands continuous bending.

Load (W):	250 g
Bend radius:	50 mm 1.97"
Bending rate:	30 times/minute (1 time includes left to right to original position)
Free cut:	can be cut to length



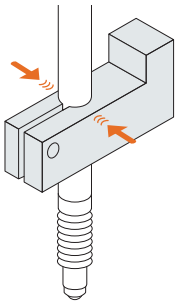


Easy Sensor Head Installation and Setup

[Reduction in the number of installation/setup steps]

Easy installation with a special bracket

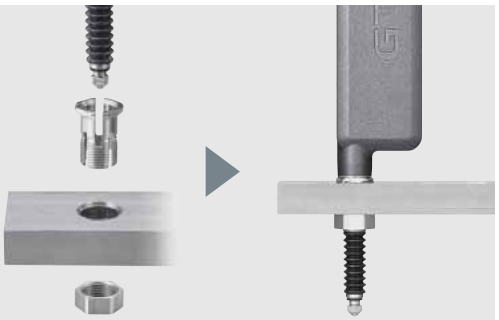
Conventional method



A slotted jig must be prepared by the user.

GT2

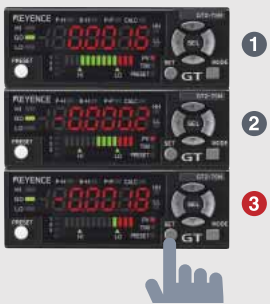
Mounting made easy simply by drilling a 10 mm 0.39" hole.



Large indicators are convenient when setting up several units.

Flashing lights

The user can easily identify an operating sensor head.



Simple Tolerance Setting

[Fewer steps for setup]

First, set the reference.

Press the PRESET button to set to 0.

Enter the tolerance value based on the master target to complete setup.

Example: Enter 0.010.0

A 0.01 mm 0.0004" tolerance range is automatically set.

Easy Amplifier Installation and Setup

[Fewer steps for installation/setup]

Select the best display unit according to the application

DIN-rail mount

GT2-71N/71P
Easy mounting anywhere

Compact, panel mount

GT2-75N/75P
For mounting in a nearby enclosure

Large display panel mount

GT2-100N/100P
Easy-to-see large display

Pulse output

GT2-71D
For outputting position data as pulses

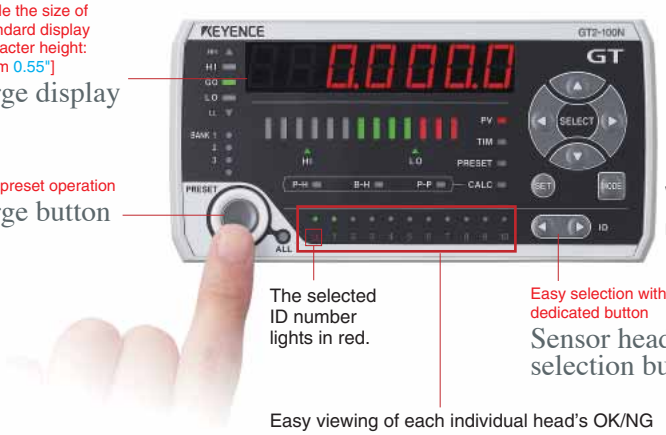
Note: For the DIN-rail mounting type, a connector type and an analog output type are also available.

Features of the large display type

Easy operation with large display and large buttons

Double the size of a standard display [Character height: 14 mm 0.55"]
Large display

Easy preset operation
Large button



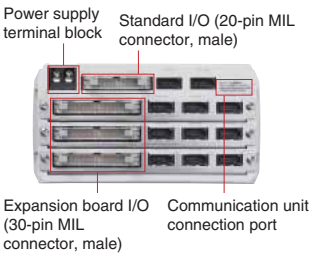
W: 159.5 mm 6.28"
H: 79.8 mm 3.14"

The selected ID number lights in red.

Easy selection with the dedicated button
Sensor head selection button

Easy viewing of each individual head's OK/NG and connection status. (OK/NG status is indicated by red or green, connection status is indicated by a blinking LED.)

A single unit can connect several sensor heads (11 heads max.).



Installing the expansion board

The expansion board allows for connection of up to 11 sensor heads.

Features of the pulse output (line driver output) type

Outputs the spindle position data

Increment/decrement direction
Resolution
Pulse width

Pulse output amplifier unit
GT2-71D

Pulse frequency selection [10/50/100/500 kHz]

The maximum pulse frequency can be selected according to the input device. The absolute detection ensures accurate position data output to an external device without tracking errors even when a slow pulse frequency is selected.

All position data can be output together.

The absolute detection allows the output of all pulses from the origin to the measurement point without origin return at power-up. Moreover, the operation is free from tracking errors.

Total cost reduction

[Simplified configuration eliminates the need for analog I/O cards and tedious PLC programming]

Analog I/O card not necessary

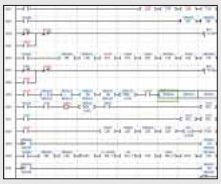
No additional equipment required

Forget about the tedious PLC programming that existing LVDT's required, the GT2 Series does everything automatically. In addition, the user can save money by eliminating the analog I/O card from the budget.

Conventional Method

Difficult and time consuming way:



+ Display + Analog card + PLC programming = **Done**

GT2 Solution

Easy way:


+ = **Done**

Easy way:


+ = **Done**

Push-button setup

HH, HI, GO, LO, LL discrete outputs

Featuring 5 digital comparator outputs (HH, HI, GO, LO and LL), the GT2 Series can be set up in minutes, not hours. Push-button calibration will leave the user wondering why they hadn't switched to the GT2 Series sooner.

HH
HI
GO
LO
LL

Quickly select from up to 4 sets of HH/HI/LO/LL limits

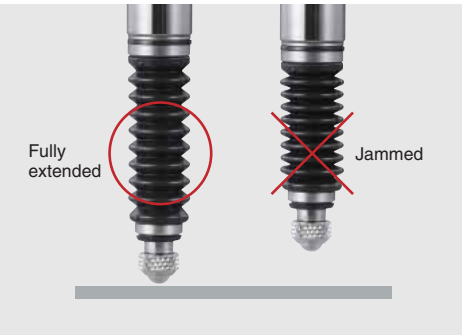
Simple product changeover

Using channel select inputs on the GT2 Series, users can easily toggle between up to 4 different sets of HH/HI/LO/LL limits, skipping the extra PLC programming.

Detection of Jam Conditions

[Current condition check]

Sensor defect detection



The sensor outputs in the event of a jam when the sensor head is not fully extended.

Equipment status check displayed by a bar indicator

In actual operation, it is difficult to read a displayed value when it changes quickly. With the bar indicator the equipment status can be easily read without reading a displayed value.

Calculations made simple

[Fewer steps for setup]

When several amplifiers are connected, the GT2 Series can do automatic calculation simply by selecting a calculation mode.

Thickness

[Shaft diameter measurement]

Positioning the target between two sensor heads will display the outer diameter.

Main unit 100.0025 + Expansion unit -0.0025 = Calculation result 100.0000

Degree of flatness

[Flatness check]

By subtracting the minimum value from the maximum value the flatness will be displayed.

0.6510 Main unit | 0.6489 Expansion unit | 0.6423 Expansion unit | 0.6479 Expansion unit

Maximum value 0.6510 − Minimum value 0.6423 = Calculation result 0.0087

Reference difference

[Determining pin height]

The height difference of a reference value can be displayed by subtracting the value of the main unit (reference) from the value of the Expansion unit.

Expansion unit 5.0032 − Main unit 5.0000 = Calculation result 0.0032

Versatile detection modes support all applications

Single head

STD (Standard) | P-H (Peak hold) | B-H (Bottom hold) | P-P (Peak to peak)

Multiple heads/when additional amplifier units are installed (Application modes)

Maximum | Minimum | Degree of flatness | Average | Reference difference | Twist | Warpage | Thickness

* For details regarding the calculation modes, refer to P.30.

Air push type extends the spindle and measures.

[Easy to set up and saves space.]

The air push type is part of the high-accuracy digital sensor GT2 Series.
A mechanism to move the sensor head is not necessary since it is possible to measure with a fixed sensor head, saving space and reducing labor.

Jigs and mechanisms to move the sensor are no longer necessary.

A complex jig is not necessary since there is no sensor head movement. In addition, errors in accuracy due to jigs have been eliminated.

Installation is quick and easy.

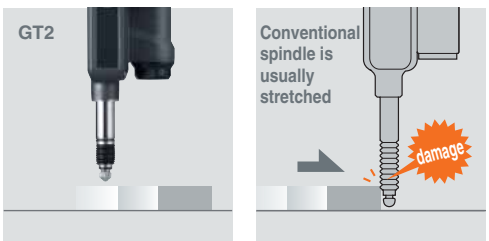
1 A dividing jig is unnecessary.

2 Air is supplied.

*1 For the 32 mm 1.26" and 50 mm 1.97" type, open a ø14 mm ø0.55" hole.

Point 1

Spindle compressed in its usual state



With the GT2, the spindle moves to the origin when it is not being supplied with air. Even if there is a problem or a condition arises where air is not being supplied, it is safe.

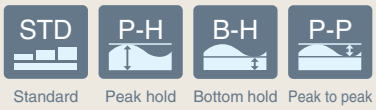
Point 2

Measuring force is unaffected by the amount of air pressure.

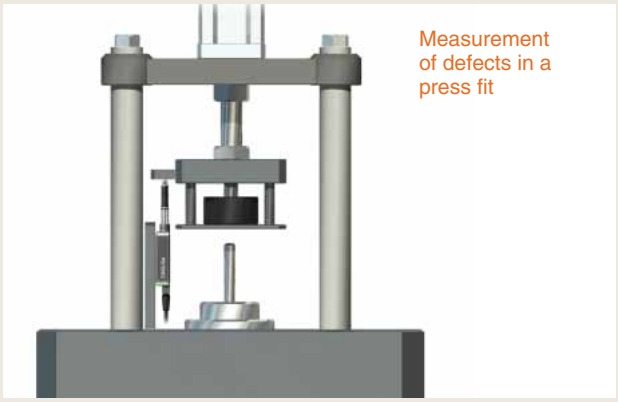
Due to the pressure free construction where air pressure is not directly applied to measurement parts, it is also safe to use with easily damaged workpieces.

Versatile detection modes support all applications

Single head



Multiple heads



Measurement of defects in a press fit

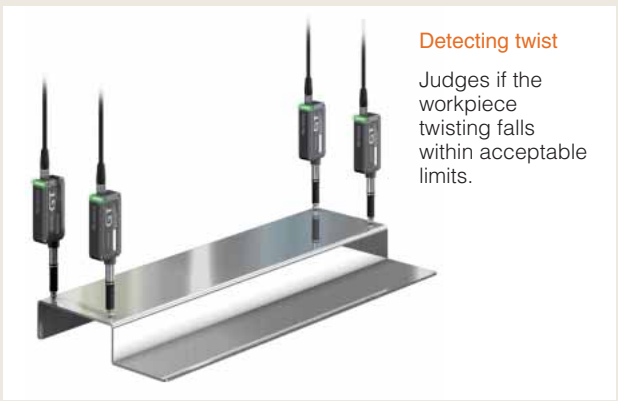
Packing insertion check

Confirms that targets are properly seated.

Board warpage detection

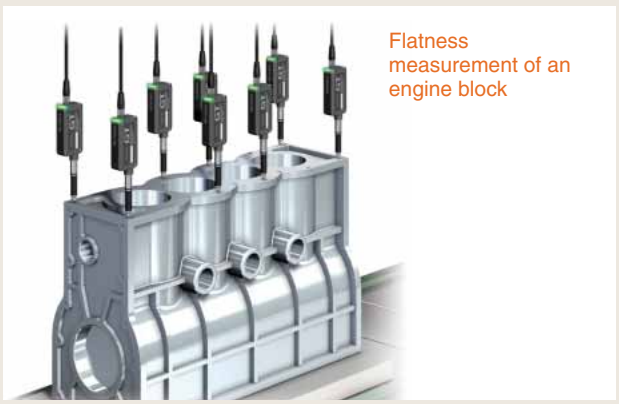
Confirms if the workpiece warpage meets the acceptable limits.

Shaft diameter measurement



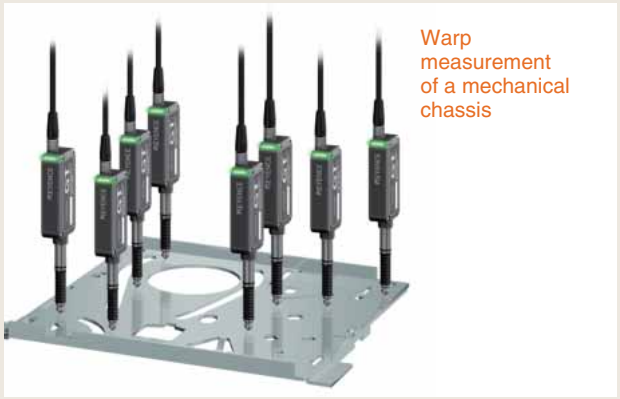
Detecting twist

Judges if the workpiece twisting falls within acceptable limits.

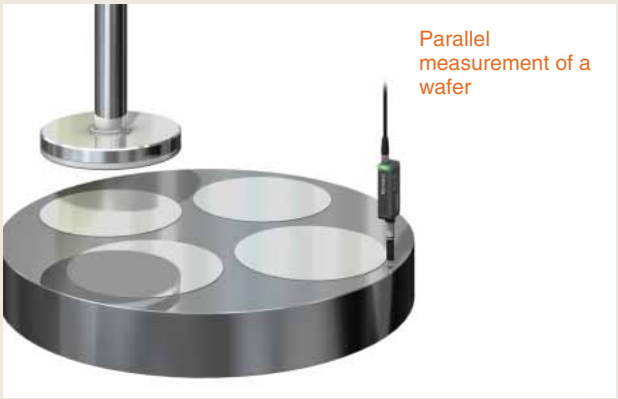


Flatness measurement of an engine block

Thickness measurement of a liquid crystal substrate



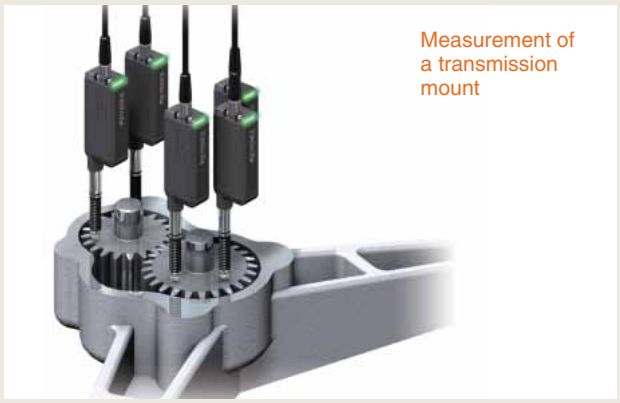
Warp measurement of a mechanical chassis



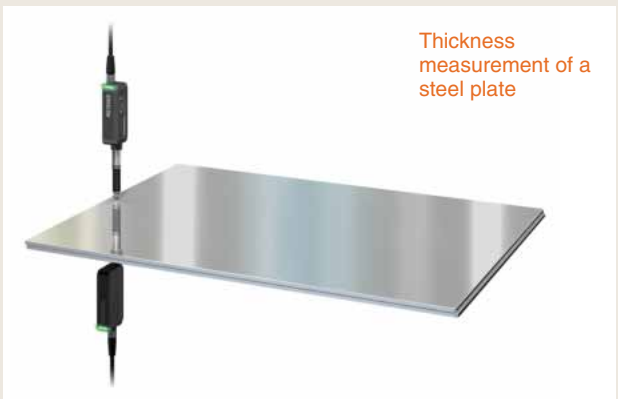
Parallel measurement of a wafer

Volume measurement of a cam lift

Thermal expansion measurement of a machine tool



Measurement of a transmission mount



Thickness measurement of a steel plate

Detection of crank shaft runout

How to select a GT2 Series sensor

Follow the steps below to select the GT2 Series sensor best suited to your operating environment from the wide range of units and accessories.

step 1 Sensor head ▸ step 2 Sensor head cable ▸ step 3 Mounting bracket ▸ step 4 Display unit (Amplifier unit) ▸ step 5 Display unit options ▸ step 6 Contact ▸ step 7 Communication unit ▸ step 8 Communication unit options

GT2 Series LINE-UP

step 1 Sensor head

Standard Type

12 mm 0.47" range
High-accuracy sensor head
GT2-H12K

12 mm 0.47" range
High-accuracy, low stress sensor head
GT2-H12KL

12 mm 0.47" range
General-purpose sensor head
GT2-H12

12 mm 0.47" range
General-purpose, low stress sensor head
GT2-H12L

32 mm 1.26" range
General-purpose sensor head
GT2-H32

32 mm 1.26" range
General-purpose, low stress sensor head
GT2-H32L

50 mm 1.97" range
General-purpose sensor head
GT2-H50

Air push Type NEW

12 mm 0.47" range
High-accuracy sensor head
GT2-A12K

12 mm 0.47" range
High-accuracy, low stress sensor head
GT2-A12KL

12 mm 0.47" range
General-purpose sensor head
GT2-A12

12 mm 0.47" range
General-purpose, low stress sensor head
GT2-A12L

32 mm 1.26" range
General-purpose sensor head
GT2-A32

50 mm 1.97" range
General-purpose sensor head
GT2-A50

step 2 Sensor head cable

step 3 Mounting bracket

step 4 Display unit

DIN-rail mount type
Amplifier unit
GT2-71N / 71P

Panel mount type
Compact amplifier unit
GT2-75N / 75P

Panel mount type
Large display amplifier unit
GT2-100N / 100P

DIN-rail mount type
Pulse output amplifier unit
GT2-71D

step 5 Display unit options

step 6 Contact

step 7 Communication unit

BCD Output unit
DL-RB1A

RS-232C Communication unit
DL-RS1A

step 8 Communication unit options

step 1

First, select a sensor head. Required

The sensor head is determined by the measuring range, force, and accuracy.

Standard Type

Commonly used type

12 mm 0.47" range

For 20 µm 0.79 Mil or less tolerance differentiation

High-accuracy Type

Resolution: 0.1 µm 0.004 Mil
Accuracy: 1 µm 0.04 Mil (P-P)

High-accuracy type sensor head
GT2-H12K

High-accuracy / Low stress type sensor head
GT2-H12KL

Low stress type

When particularly high-accuracy is not required

General-purpose Type

Resolution: 0.5 µm 0.02 Mil
Accuracy: 2 µm 0.08 Mil (P-P)

General-purpose type sensor head
GT2-H12

General-purpose / Low stress type sensor head
GT2-H12L

Low stress type

For a wider measuring range

32 mm 1.26" range

Resolution: 0.5 µm 0.02 Mil
Accuracy: 3 µm 0.12 Mil (P-P)

General-purpose type sensor head
GT2-H32

General-purpose / Low stress type sensor head
GT2-H32L

Low stress type

For a larger target

50 mm 1.97" range

Resolution: 0.5 µm 0.02 Mil
Accuracy: 3.5 µm 0.14 Mil (P-P)

General-purpose type sensor head
GT2-H50

The low stress type is not available for the 50 mm 1.97" range sensor head.

The low stress type does not require a dust boot.

What is the low stress type?

The low stress type uses a low repulsion force spring to reduce the pressure on the target. When using a target that can be easily deformed or damaged, select this type.

Measuring range	Type of accuracy	Measuring force	Resolution	Accuracy	Measuring force*			Model
					Downward mounting	Side mounting	Upward mounting	
12 mm 0.47"	High-accuracy	Standard	0.1 µm 0.004 Mil	1 µm 0.04 Mil	1.0 N	0.9 N	0.8 N	GT2-H12K
		Low stress			0.4 N	0.3 N	0.2 N	GT2-H12KL
	General-purpose	Standard	0.5 µm 0.02 Mil	2 µm 0.08 Mil	1.0 N	0.9 N	0.8 N	GT2-H12
		Low stress			0.4 N	0.3 N	0.2 N	GT2-H12L
32 mm 1.26"	General-purpose	Standard	0.5 µm 0.02 Mil	3 µm 0.12 Mil	2.1 N	1.8 N	1.5 N	GT2-H32
		Low stress			1.2 N	0.9 N	0.6 N	GT2-H32L
50 mm 1.97"		Standard		3.5 µm 0.14 Mil	3.2 N	2.8 N	2.4 N	GT2-H50

* Value at center of measuring range.

Dust boot (optional accessory for replacement)

Appearance	Applicable sensor head	Model
	GT2-H12	OP-84332
	GT2-H12K	
	GT2-H32	OP-84459
	GT2-H50	OP-84460

Air Push Type NEW

Commonly used type

12 mm 0.47" range

For 20 µm 0.79 Mil or less tolerance differentiation

High-accuracy Type

Resolution: 0.1 µm 0.004 Mil
Accuracy: 1 µm 0.04 Mil (P-P)

High-accuracy type sensor head
GT2-A12K

High-accuracy / Low stress type sensor head
GT2-A12KL

Low stress type

When particularly high-accuracy is not required

General-purpose Type

Resolution: 0.5 µm 0.02 Mil
Accuracy: 2 µm 0.08 Mil (P-P)

General-purpose type sensor head
GT2-A12

General-purpose / Low stress type sensor head
GT2-A12L

Low stress type

For a wider measuring range

32 mm 1.26" range

Resolution: 0.5 µm 0.02 Mil
Accuracy: 3 µm 0.12 Mil (P-P)

General-purpose type sensor head
GT2-A32

The low stress type is not available for the 32 mm 1.26" range sensor head.

For a larger target

50 mm 1.97" range

Resolution: 0.5 µm 0.02 Mil
Accuracy: 3.5 µm 0.14 Mil (P-P)

General-purpose type sensor head
GT2-A50

The low stress type is not available for the 50 mm 1.97" range sensor head.

Measuring range	Type of accuracy	Measuring force	Resolution	Accuracy	Measuring force*			Model
					Downward mounting	Side mounting	Upward mounting	
12 mm 0.47"	High-accuracy	Standard	0.1 µm 0.004 Mil	1 µm 0.04 Mil	1.2 N	1.1 N	1.0 N	GT2-A12K
		Low stress			0.4 N	0.3 N	0.2 N	GT2-A12KL
	General-purpose	Standard	0.5 µm 0.02 Mil	2 µm 0.08 Mil	1.2 N	1.1 N	1.0 N	GT2-A12
		Low stress			0.4 N	0.3 N	0.2 N	GT2-A12L
32 mm 1.26"	General-purpose	Standard	0.5 µm 0.02 Mil	3 µm 0.12 Mil	2.1 N	1.8 N	1.5 N	GT2-A32
50 mm 1.97"		Standard		3.5 µm 0.14 Mil	3.2 N	2.8 N	2.4 N	GT2-A50

* Value at center of measuring range.

Adjustable spindle speed

The speed controller (optional) allows the spindle movement speed to be adjusted.

Speed controller
OP-82133

step 2 Select a sensor head cable Required

Select the sensor head cable according to installation conditions and the distance between the sensor head and the display unit (amplifier).
The L-shaped type can be used for the 12 mm 0.47" range sensor head (GT2-H12/A12) only.

Commonly used type

Straight Type

Cable connection

For space-saving installation

L-shaped Type

Cable connection

This connector does not rotate.
It is fixed in the direction as shown in the photo (left).

Type	Appearance	Cable length	Model	Weight
Straight		2 m 6.6'	GT2-CH2M	Approx. 80 g
		5 m 16.4'	GT2-CH5M	Approx. 190 g
		10 m 32.8'	GT2-CH10M	Approx. 360 g
		20 m 65.6'	GT2-CH20M	Approx. 680 g
L-shaped Applicable to 12 mm 0.47" range type only		2 m 6.6'	GT2-CHL2M	Approx. 80 g
		5 m 16.4'	GT2-CHL5M	Approx. 190 g
		10 m 32.8'	GT2-CHL10M	Approx. 360 g
		20 m 65.6'	GT2-CHL20M	Approx. 680 g

The cable can be freely cut. If the cable is cut, a connector (OP-84338) is required to connect to the display unit (amplifier).

This connector is required if the cable is cut.

The cable can be cut anywhere.

Connector used to connect to a display unit (2 pcs.) **OP-84338**

step 3 Select mounting brackets as required.

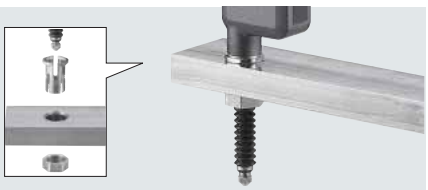
Select a mounting bracket depending on the sensor head mounting method.

For GT2 12 mm 0.47" range models

Commonly used type

Mounting Bracket A

OP-76874



After drilling a ø10 mm ø0.39" hole, insert the sensor head through the hole, and fasten it.

Vibration resistant, Reinforced holding force

Mounting Bracket C

OP-84396

For side mounting

Mounting Bracket B

OP-76875

Horizontally mounts the sensor head.

For GT2 32 mm 1.26" and 50 mm 1.97" range models

Vibration resistant, Reinforced holding force

Mounting Bracket D

OP-84327

After drilling a ø14 mm ø0.55" hole, insert the sensor head through the hole and fasten it.

* The mounting method is the same as mounting brackets A and C.
* When using the GT2-H32L with its contact probe directing upward, use the mounting holes in the sensor housing.

step 4 Next, select a display unit (amplifier). Required

After selecting a display unit depending on the mounting method, select optional accessories as required.

Easy installation in any place

DIN-rail Mount Type

Commonly used type

Loose wire type

GT2-71N/71P

Easy installation/replacement

Connector type

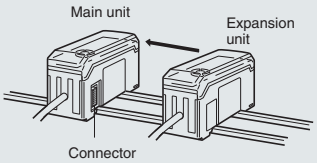
GT2-71CN/71CP

Type			Model		
			NPN output	PNP output	Line driver output
Loose wire	Standard	Main unit	GT2-71N	GT2-71P	–
		Expansion unit	GT2-72N	GT2-72P	
	Pulse output		–	–	GT2-71D
Connector*	Standard	Main unit	GT2-71CN	GT2-71CP	–
	Analog		GT2-71MCN	GT2-71MCP	
	Standard	Expansion unit	GT2-72CN	GT2-72CP	

* When the connector type amplifier unit is used, an optional socket cable should be purchased separately (See the next page.).

Connecting additional expansion units

Use the connector on the side of the unit.



To connect an additional unit, purchase the optional end unit (**OP-26751**).

For each main unit, up to 14 expansion units can be connected.
When several units are connected, a power supply cable is not required for the expansion units. The GT2 Series can be connected with the GT Series. However, the maximum number of connectable units is 10 units (including main unit).
Unit expansion is not possible for the GT2-71D.

The analog output type amplifier unit provides three discrete outputs.

Installation on easy-to-see places

Panel Mount Type

Commonly used type

Compact type

GT2-75N/75P
W: 66 mm 2.60" H: 23.9 mm 0.94"

Easy-to-see display for easier operation

Large display type

GT2-100N/100P
W: 159.5 mm 6.28" H: 79.8 mm 3.14"

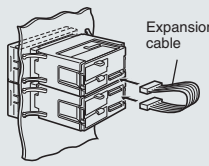
Type		Model	
		NPN output	PNP output
Compact	Main unit	GT2-75N	GT2-75P
	Expansion unit	GT2-76N	GT2-76P
Large display*		GT2-100N	GT2-100P

* When these amplifier units are not mounted to a panel, an optional mounting bracket should be purchased separately (See the next page.).

Connecting additional main and expansion units [Compact type only]

Connect using the cable supplied with the expansion unit.

To connect additional units, place the main unit in the top position and connect the expansion units below (vertically).



* For horizontal installation, the optional expansion cable (**OP-35361**, 300 mm 11.81") is required. For details, refer to the description in the option list.

For the compact type amplifier unit, up to 14 expansion units can be connected to one main unit without providing power supply cables individually. The expansion connection can include the GT Series, however, the maximum number of connectable units is limited to 10 including the main unit.

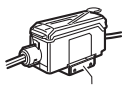
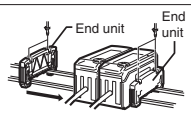
A single unit of the large display type can connect two sensor heads. When the optional expansion boards are used, up to 11 sensor heads can be connected. For the details of the expansion board, see the next page.

step 5

Select the optional accessories for the display unit as required.

Select the optional accessories according to the display unit selected in Step 4.

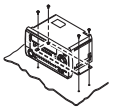
Optional accessories for the GT2-71/72 (DIN-rail mount)

Type	Description	Model
For installation without a DIN-rail **Mounting Bracket for DIN-rail mount Type Display unit** (optional accessory for main unit) 	The amplifier can be mounted without using a DIN-rail.  Amplifier mounting bracket	OP-76877
Required for connecting additional units **End unit** (Optional) 	To connect an additional expansion unit, use the end units to secure the display units on both ends. When connecting additional units, be sure to use the end units. (2 pcs.) 	OP-26751
Required when the connector type is used **Socket cable** **2 m 6.6'/10 m 32.8'** (Optional) 	Used to connect the connector type display unit. Since the amplifier unit does not include the socket cable, it must be purchased separately.	GT2-CA2M (2 m 6.6') GT2-CA10M (10 m 32.8')

Optional accessories for the GT2-75/76 (panel mount, compact)

Type	Description	Model
Standard equipment **Panel mounting bracket** (Included in panel mount type amplifier) 	The panel mounting bracket is included in the panel mount type amplifier. If the supplied bracket is lost or damaged, order a new bracket.	OP-84394
If the standard cable length is not enough **Expansion cable:** **300 mm 11.81"** (Optional) 	Extension cable used for panel mount type amplifier. Use this cable if the standard 50 mm 1.97" cable is not long enough. Up to 4 extension cables can be used at once. However, if an extension cable is used, the number of expansion units that can be connected to a single main unit is limited to 4 units.	OP-35361

Optional accessories for the GT2-100 (panel mount, large display)

Type	Description	Model
To connect three or more sensor heads **Expansion board** **For GT2-100N** (Optional) **For GT2-100P** (Optional) 	Installing this expansion board into the GT2-100 allows you to connect more than two sensor heads. Since one expansion board allows connection of one to three sensor heads, the maximum of 11 sensor heads can be connected in total. No. of sensor heads / No. of expansion boards: 1 or 2 / None; 3 to 5 / 1; 6 to 8 / 2; 9 to 11 / 3	GT2-E3N (NPN) GT2-E3P (PNP)
To install the GT2-100 on a workbench, etc. **Mounting bracket** (Optional) 	When the amplifier unit is not mounted to a panel, use this mounting bracket to secure it.  Secure the amplifier unit with M4 screws.	OP-84331
I/O connector **20-pin MIL connector** (for the amplifier unit, optional) **30-pin MIL connector** (for the expansion board, optional)	A set of connector and contacts (for AWG 24 to 22). The cable should be prepared by the user.	OP-22185 (20-pin) OP-84456 (30-pin)
Contact for maintenance work (Optional)	For AWG 24 to 22, Package of 200	OP-22186
Small diameter contact (Optional)	For AWG 28 to 26, Package of 200	OP-30594
Special crimping tool (Optional)	Use this tool to crimp the contact.	OP-21734

step 6 Select a contact as needed.

The standard type and carbide type contacts are included in the GT2-H12 (L) / H32 (L) / H50 / A12 (L) / A32 / A50 and the GT2-H12K (L) / A12K (L) respectively, as standard equipment. Other types of contacts are optionally available. Select optional contacts as required.

For standard measurement

Standard
OP-77678

Standard equipment of general-purpose type sensor head GT2-H12 (L) / H32 (L) / H50 / A12 (L) / A32 / A50

Made from a carbide alloy – For high-accuracy measurement

Super-tough
OP-77682

Standard equipment of high-accuracy type sensor head GT2-H12K (L) / A12K (L)

For targets with curved surfaces

Flat Plate (Optional)
OP-77679

Ignore the contours of a target with a curved surface.

For moving targets

Roller (Optional)
OP-77680

The roller smoothly detects moving targets.

To prevent damage to target

Fluorocarbon Resin
(Optional)
OP-80228

Made from material that is unlikely to damage the target's surface.

Electrically insulated from the target

Ceramic (Optional)
OP-81970

Ceramic is used for the ball of the contact tip.

For measurement in narrow spaces

Needle (Optional)
OP-77681

The needle contact is made of super-tough tungsten alloy.

For measurement at several points with small targets

Offset (Optional)
OP-77683

Detecting points can be added in narrow range.

For 12.2 mm 0.48" spindle extension

Spacer (Optional)
OP-77684

When lifting a spindle by hand

Lift lever (Optional)
OP-84397

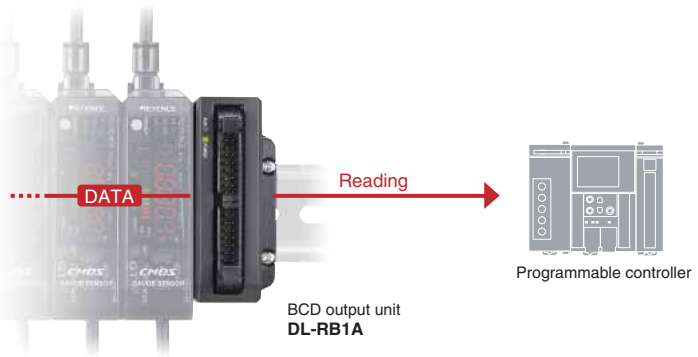
step 7 Select a communication unit as needed.

A communication unit is required to extract numerical data from the GT2 Series to an external device. With a single unit, data from up to 15 GT2 Series units can be extracted.

To extract BCD data

BCD Output Unit

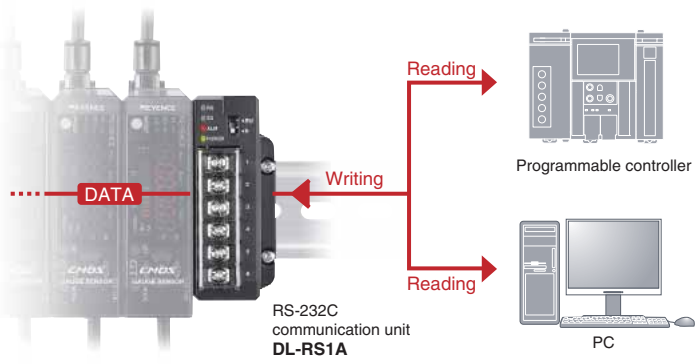
Detection data can be read from a specified sensor amplifier via an external device such as a PLC.



For RS-232C communication

RS-232C Communication Unit

Sensor amplifier detection data, settings, and calculation results from several GT units can be read and amplifier settings can be written via an external device such as a PLC or PC.



step 8

Select the optional accessories for the communication unit as necessary.

Select the optional accessories according to the type of the communication unit selected in Step 7.

Optional accessories common to the DL-RB1A and DL-RS1A

Type	Description	Model
To install the unit without using a DIN-rail **Mounting bracket** 	The communication unit can be mounted without using a DIN-rail.	**OP-60412**
To connect the unit to the panel mount type display unit **Expansion cable: 300 mm 11.81"** (Optional) 	Although the DL Series is designed for DIN-rail mounting only, the optional expansion cable (OP-35361, 300 mm 11.81") enables communication with the panel mount type amplifier unit (compact/large display). 	**OP-35361**

Optional accessories for the DL-RB1A

Type	Description	Model
I/O connector **34-pin vertical MIL connector** (Optional) [40 contacts for AWG 24 to 22 included]	A set of connector and contacts (for AWG 24 to 22). The cable should be prepared by the user.	**OP-23139**
I/O connector **34-pin slanting MIL connector** (Optional) [40 contacts for AWG 24 to 22 and a cable tie included]	A set of connector and contacts (for AWG 24 to 22). The cable should be prepared by the user.	**OP-42224**
Special crimping tool (Optional) 	Use this tool to crimp the contact.	**OP-21734**
Contact for maintenance work (Optional)	For AWG 24 to 22, Package of 200	**OP-22186**
Small diameter contact (Optional)	For AWG 28 to 26, Package of 200	**OP-30594**

Optional accessories for the DL-RS1A

Type	Description	Model
D-sub 9-pin connector-to-loose wires cable (5 m 16.4', optional)	This cable can be used to connect the DL-RS1A to a personal computer or other serial device.	**OP-81283**

Sensor heads for the GT2 Standard Type

Model		GT2-H12K	GT2-H12KL	GT2-H12	GT2-H12L	GT2-H32	GT2-H32L	GT2-H50
Type		Standard / Low stress (L) type (Sensor head for 12 mm 0.47")				Standard / Low stress (L) type (Sensor head for 32 mm 1.26"/50 mm 1.97" range)		
Appearance								
Detection system		Quartz glass scale, CMOS image sensor projection system, Absolute type (without tracking error)						
Measuring range		12 mm 0.47"				32 mm 1.26"		50 mm 1.97"
Resolution		0.1 µm 0.004 Mil		0.5 µm 0.02 Mil				
Accuracy (20°C 68°F)		1 µm 0.04 Mil (p-p)		2 µm 0.08 Mil (p-p)		3 µm 0.12 Mil (p-p)		3.5 µm 0.14 Mil (p-p)
Measuring force *1	Downward mounting	1.0 N	0.4 N	1.0 N	0.4 N	2.1 N	1.2 N	3.2 N
	Side mounting	0.9 N	0.3 N	0.9 N	0.3 N	1.8 N	0.9 N	2.8 N
	Upward mounting	0.8 N	0.2 N	0.8 N	0.2 N	1.5 N	0.6 N	2.4 N
Mechanical response		10 Hz	4 Hz	10 Hz	4 Hz	6 Hz	5 Hz	7 Hz
Probe		Carbide ball ø3		Steel ball ø3				
Operation indicator		2-color LED (red, green)						
Environmental resistance	Enclosure rating	IP67	–	IP67	–	IP67	–	IP67
	Ambient temperature	-10 to +55°C 14 to 131°F						
	Relative humidity	35 to 85% RH (No condensation)						
	Vibration	10 to 55 Hz, 1.5 mm 0.06" double amplitude, 2 hours in each of X, Y, and Z directions						
Sensor head cable		Optional (M8 connector)						
Materials	Main body	Main body cast: Zinc die-casting, Indicator: Polyarylate, Dust boot: NBR *2						
	Contact	TYPE304 Stainless steel, super-tough tungsten alloy		TYPE304, 440C Stainless steel				
Weight (excluding cable)		Approx. 95 g				Approx. 270 g		Approx. 320 g
Accessories		Refer to the instruction manual.						

*1 Value at center of measuring range.
*2 A dust boot is not provided with the GT2-H12KL, the GT2-H12L or the GT2-H32L.

Sensor heads for the GT2 Air Push Type

Model		NEW GT2-A12K	NEW GT2-A12KL	NEW GT2-A12	NEW GT2-A12L	NEW GT2-A32	NEW GT2-A50
Type		Standard / Low stress (L) type (Sensor head for 12 mm 0.47")				Standard type (Sensor head for 32 mm 1.26"/50 mm 1.97" range)	
Appearance							
Detection system		Quartz glass scale, CMOS image sensor projection system, Absolute type (without tracking error)					
Measuring range		12 mm 0.47"				32 mm 1.26"	50 mm 1.97"
Resolution		0.1 µm 0.004 Mil		0.5 µm 0.02 Mil			
Accuracy (20°C 68°F) *1		1 µm 0.04 Mil (p-p)		2 µm 0.08 Mil (p-p)		3 µm 0.12 Mil (p-p)	3.5 µm 0.14 Mil (p-p)
Measuring force *2	Downward mounting	1.2 N	0.4 N	1.2 N	0.4 N	2.1 N	3.2 N
	Side mounting	1.1 N	0.3 N	1.1 N	0.3 N	1.8 N	2.8 N
	Upward mounting	1.0 N	0.2 N	1.0 N	0.2 N	1.5 N	2.4 N
Operation indicator		2-color LED (red, green)					
Applied pressure range		0.25 to 0.5 MPa					
Pressure resistance		1.0 MPa					
Environmental resistance	Enclosure rating	IP67 *3	–	IP67 *3	–	IP67 *3	IP67 *3
	Ambient temperature	0 to 55°C 32 to 131°F					
	Relative humidity	35 to 85% RH (No condensation)					
	Vibration *4	10 to 55 Hz, 1.5 mm 0.06" double amplitude, 2 hours in each of X, Y, and Z directions					
Sensor head cable		Optional (M8 connector)					
Materials	Main body	Main body case: Zinc die-casting; Cylinder part: Aluminium alloy; Air joint resin part: Polyacetal; Air joint metal part: Brass nickel plating; Indicator: Polyarylate					
	Dust boot	NBR	–	NBR	–	NBR	NBR
	Contact *5	TYPE304 Stainless steel, super-tough tungsten alloy		TYPE304, 440C Stainless steel			
Weight (excluding cable)		Approx. 145 g				Approx. 340 g	Approx. 405 g
Accessories		Refer to the instruction manual.					

*1 Value when ambient temperature is 20°C 68°F
*2 Value at center of measuring range.
Please note that the measurement force changes depending on the installation state of the dust boots.
*3 Make sure the air tube is connected to the air exhaust joint and that no foreign materials enter inside from the joint.
*4 In the case where a mounting bracket D is used with GT2-A32 and GT2-A50, the double amplitude becomes 0.75 mm 0.03".
*5 The contact is included with the sensor.

DIN-rail mount type amplifier unit (For the pulse output type, see page 19.)

Model	NPN output	GT2-71N	GT2-72N	GT2-71CN	GT2-72CN	GT2-71MCN
	PNP output	GT2-71P	GT2-72P	GT2-71CP	GT2-72CP	GT2-71MCP
Mounting method		DIN-rail mount				
Type		Standard loose wire type		Standard connector type		Analog output, connector type
Main unit / Expansion unit *1		Main unit	Expansion unit	Main unit	Expansion unit	Main unit
Appearance						
Power supply voltage *1		10 to 30 VDC, including 10% ripple (P-P)				20 to 30 VDC, including 10% ripple (P-P)
Power consumption *2	Normal	2200 mW max. (30 V, 73.3 mA max.)				2700 mW max. (30 V, 90 mA max.)
	Power saving (Eco)	1700 mW max. (30 V, 56.7 mA max.)				2200 mW max. (30 V, 73.3 mA max.)
Display power	Measured value display	6 + 1/2-digit 7-segment LED (red)				
	Other displays	2-color, 13-level bar LED display (red, green), indicators (red, green)				
Display range		-199.999.9 to 199.999.9				
Display resolution		0.1 µm 0.004 Mil				
Sampling rate		1000 times/sec.				
Control input	Timing input	Input time: 2 ms min.				
	Preset input	Input time: 20 ms min.				
	Reset input					
	Bank input					
Control output	HH / High / Go / Low / LL	NPN/PNP open collector, Applicable current: 50 mA, Maximum applicable voltage (NPN: 40 V, PNP: 30 V) Residual voltage at ON: 1 V max. * N.O./N.C switchable (GT2-71MCN/71MCP: HH and LL are not available.)				
Analog output		–				4 to 20 mA, maximum load resistance: 350 Ω Analog output range can be changed as desired.
Response time		hsp (3 ms), 5 ms, 10 ms, 100 ms, 500 ms, 1 s				
Environmental resistance	Ambient temperature	-10 to +50°C 14 to 122°F (GT2-71MCN/71MCP: -10 to +45°C 14 to 113°F when expansion unit(s) is connected)				
	Relative humidity	35 to 85% RH (No condensation)				
	Vibration	10 to 55 Hz, 1.5 mm 0.06" double amplitude, 2 hours in each of X, Y, and Z directions				
Materials		Main body case: Polycarbonate, Key top: Polyacetal, Front sheet: PET, Cable: PVC				
Weight		GT2-71N/71P/72N/72P: Approx. 140 g (including power cable), GT2-71CN/71CP/72CN/72CP/71MCN/71MCP: Approx. 70 g				
Accessories		GT2-71N/71P/71CN/71CP/71MCN/71MCP: Instruction manual, Cover seal, GT2-72N/72P/72CN/72CP: None				

Panel mount type amplifier unit

Model	NPN output	GT2-75N	GT2-76N	GT2-100N	GT2-E3N
	PNP output	GT2-75P	GT2-76P	GT2-100P	GT2-E3P
Mounting method		Panel mount		Panel mount/Screw mounting using optional mounting bracket	Installed into GT2-100N/100P (up to 3 boards)
Main unit / Expansion unit *1		Main unit	Expansion unit	2 channels provided as standard. Addition of expansion boards allows expansion to 11 channels max.	Expansion unit (1 to 3 channels)
Appearance					
Power supply voltage *1		10 to 30 VDC, including 10% ripple (P-P)		20 to 30 VDC, including 10% ripple (P-P)	Supplied from GT2-100N/100P
Power consumption *2	Normal	2200 mW max. (30 V, 73.3 mA max.)		4500 mW max. (30 V, 150 mA max.)	4200 mW max. (30 V, 140 mA max.)
	Power saving (Eco)	1700 mW max. (30 V, 56.7 mA max.)		3600 mW max. (30 V, 120 mA max.)	4000 mW max. (30 V, 133.3 mA max.)
Display power	Measured value display	6 + 1/2-digit 7-segment LED (red)			–
	Other displays	2-color, 13-level bar LED display (red, green), indicators (red, green)			
Display range		-199.999.9 to 199.999.9			
Display resolution		0.1 µm 0.004 Mil			
Sampling rate		1000 times/sec.			
Control input	Timing input	Input time: 2 ms min.			
	Preset input	Input time: 20 ms min.			
	Reset input				
	Bank input				
Control output	HH / High / Go / Low / LL	NPN/PNP open collector, Applicable current: 50 mA, Maximum applicable voltage (NPN: 40 V, PNP: 30 V) Residual voltage at ON: 1 V max. * N.O./N.C switchable (Applicable current decreases to 20 mA or lower when 2 or more sensor heads are connected to the GT2-100 Series.)			
Response time		hsp (3 ms), 5 ms, 10 ms, 100 ms, 500 ms, 1 s			
Environmental resistance	Ambient temperature	-10 to +50°C 14 to 122°F			
	Relative humidity	35 to 85% RH (No condensation)			
	Vibration	10 to 55 Hz, 1.5 mm 0.06" double amplitude, 2 hours in each of X, Y, and Z directions (GT2-100N/P: 0.15 mm 0.01" double amplitude)			
Materials		Main body case: Polycarbonate, Key top: Polyacetal, Front sheet: PET, Cable: PVC (GT2-75N/75P/76N/76P only)			–
Power supply / I/O cable		12-core connector connection (Connecting cable included)		Power supply: Terminal block, I/O: 20-pin connector (MIL standard)	I/O: 30-pin connector (MIL standard)
Weight		GT2-75N/75P/76N/76P: Approx. 140 g (including panel mounting bracket, protective front cover and power cable)			
		GT2-100N/100P: Approx. 380 g, GT2-E3N/E3P: Approx. 80 g			
Accessories		GT2-75N/75P: Panel mounting bracket, protective front cover, power cable, instruction manual, cover seal			
		GT2-76N/76P: Panel mounting bracket, protective front cover, power cable, expansion cable			
		GT2-100N/100P: Instruction manual, panel mounting bracket, GT2-E3N/E3P: None			

*1 Precautions when the GT2-70 Series is used with an expansion unit (excluding GT2-71D)

Up to 15 amplifier units can be connected; main unit: 1 unit, expansion unit: 14 units. To use the DIN-rail mount type, be sure to mount the amplifier unit to a DIN-rail (using the metal bracket). When mounting additional units, be sure to use the end units (OP-26751). When mounting additional units, depending on the number of units to be added, confirm the following specification limitations.

<Up to 8 units (including main unit)>
- The power supply voltage is 20 to 30 VDC.
- The maximum applicable current for each output is 20 mA.

<Up to 9 to 15 units (including main unit)>
- The power supply voltage is 20 to 30 VDC.
- The maximum applicable current for each output is 10 mA (including DL-RB1A output current).
- The residual voltage at ON Is 1.5 V or less.

*2 For GT2-100 Series, when the maximum number of sensor heads are connected and all units are set to power saving mode

DIN-rail mount type pulse output amplifier unit

Model		GT2-71D
Appearance		
Mounting method		DIN-rail mount
Power supply voltage		10 to 30 VDC, including 10% ripple (P-P)
Current consumption		1600 mW (30 V, 53.3 mA max.)
Indicator		Power supply (green)/Alarm (red) indicator, pulse output indicator (green), input indicator (green)
Pulse resolution		Selectable from 0.1 µm 0.004 Mil, 0.5 µm 0.02 Mil, 1 µm 0.04 Mil, and 10 µm 0.39 Mil (Factory setting: 0.5 µm 0.02 Mil)
Minimum phase difference		Selectable from 0.5 µs, 2.5 µs, 5 µs, and 25 µs (Factory setting: 2.5 µs)
Control input	Origin return	Input time: 20 ms min.
Output signal		90° phase difference, differential square wave (EIA-422 compliant)
Output signal level		+5V, øA, øA-, øB, øB-, øZ, øZ-: Line driver output
Environmental resistance	Ambient temperature	-10 to +50°C 14 to 122°F
	Relative humidity	35 to 85% RH (No condensation)
	Vibration	10 to 55 Hz, 1.5 mm 0.06" double amplitude, 2 hours in each of X, Y, and Z directions
Material		Main body case: Polycarbonate, Cable: PVC
Weight		Approx. 110 g (including power supply cable)
Accessories		Instruction manual, SW protection sticker

Communication unit (Common specifications)

Model		DL-RB1A	DL-RS1A
Appearance			
Power supply voltage		20 to 30 VDC, including ripple, Ripple (P-P): 10% max. (Supplied via connected sensor amplifier)	
Power consumption		27 mA max.	25 mA max.
Number of connectable sensor amplifiers		Up to 15 units (including main unit)	
Indicator		Alarm indicator lamp (red), Power indicator lamp (green)	Communication indicator lamp (green x 2), Alarm indicator lamp (red), Power indicator lamp (green)
Environmental resistance	Ambient temperature	-10 to +55°C 14 to 131°F	
	Relative humidity	35 to 85% RH (No condensation)	
	Vibration	10 to 55 Hz, 1.5 mm 0.06" double amplitude, 2 hours in each of X, Y, and Z directions	
Material		Main body case: Polycarbonate	
Weight		Approx. 46 g	Approx. 53 g
Accessories		Instruction manual, End units (x 2), Switch protection seal, Expansion connector cover	

Communication unit (DL-RS1A Communication Specifications)

Model	DL-RS1A
Appearance	
Communication method	Full duplex
Synchronization method	Start-stop
Transmission code	ASCII
Baud rate	2400/4800/9600/19200/38400 bps selectable (Factory-setting: 9600 bps)
Date bit length	8-bit/7-bit selectable (Factory-setting: 8 bits)
Parity check	None/Even/Odd selectable (Factory- setting: None)
Stop bit length	1 bit
Data delimiter	Data reception: automatically recognizes CR or CR+LF Data transmission: Fixed to CR+LF

Pin assignment for the DL-RB1A (BCD)

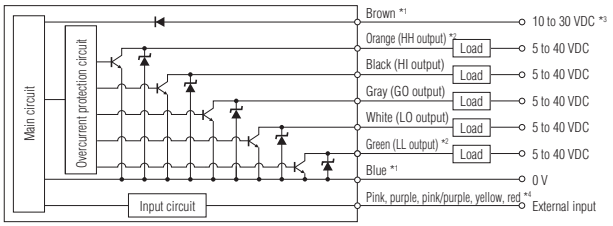
Pin No.	Signal name	Description
1	IDSEL 1	ID No. selection input 1
2	IDSEL 2	ID No. selection input 2
3	IDSEL 3	ID No. selection input 3
4	IDSEL 4	ID No. selection input 4
5	DRQ	Data request input
6	BCD DIGIT 1 (1)	BCD 1st digit 1×10^0
7	BCD DIGIT 1 (2)	BCD 1st digit 2×10^0
8	BCD DIGIT 1 (4)	BCD 1st digit 4×10^0
9	BCD DIGIT 1 (8)	BCD 1st digit 8×10^0
10	BCD DIGIT 2 (1)	BCD 2nd digit 1×10^1
11	BCD DIGIT 2 (2)	BCD 2nd digit 2×10^1
12	BCD DIGIT 2 (4)	BCD 2nd digit 4×10^1
13	BCD DIGIT 2 (8)	BCD 2nd digit 8×10^1
14	BCD DIGIT 3 (1)	BCD 3rd digit 1×10^2
15	BCD DIGIT 3 (2)	BCD 3rd digit 2×10^2
16	BCD DIGIT 3 (4)	BCD 3rd digit 4×10^2
17	BCD DIGIT 3 (8)	BCD 3rd digit 8×10^2

Pin No.	Signal name	Description
18	BCD DIGIT 4 (1)	BCD 4th digit 1×10^3
19	BCD DIGIT 4 (2)	BCD 4th digit 2×10^3
20	BCD DIGIT 4 (4)	BCD 4th digit 4×10^3
21	BCD DIGIT 4 (8)	BCD 4th digit 8×10^3
22	BCD DIGIT 5 (1)	BCD 5th digit 1×10^4
23	BCD DIGIT 5 (2)	BCD 5th digit 2×10^4
24	BCD DIGIT 5 (4)	BCD 5th digit 4×10^4
25	BCD DIGIT 5 (8)	BCD 5th digit 8×10^4
26	BCD DIGIT 6 (1)	BCD 6th digit 1×10^5
27	BCD DIGIT 6 (2)	BCD 6th digit 2×10^5
28	BCD DIGIT 6 (4)	BCD 6th digit 4×10^5
29	BCD DIGIT 6 (8)	BCD 6th digit 8×10^5
30	BCD SIGN	BCD data polarity sign
31	BCD STB	Strobe output
32	ALARM	Alarm output
33	COM	Common
34	COM	Common

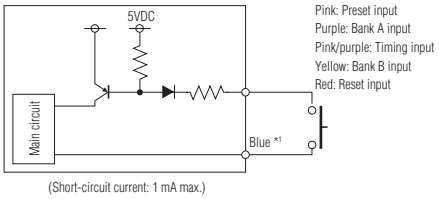
1	2
3	4
5	6
7	8
9	10
11	12
13	14
15	16
17	18
19	20
21	22
23	24
25	26
27	28
29	30
31	32
33	34

Input/Output Circuits

I/O circuit (GT2-71N/72N/71CN/72CN/71MCN/75N/76N)

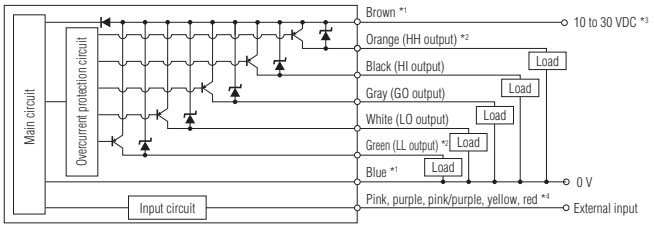


External input circuit

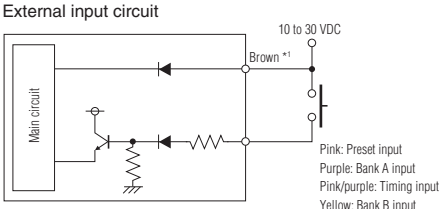


(Short-circuit current: 1 mA max.)

I/O circuit (GT2-71P/72P/71CP/72CP/71MCP/75P/76P)



External input circuit

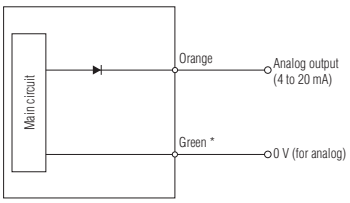


(Short-circuit current: 2 mA max.)

*1 Brown and blue are applicable only to main units (GT2-71N/71P/71CN/71CP/71MCN/71MCP/75N/75P). Not to expansion units (GT2-72N/72P/72CN/72CP/76N/76P). The connector type expansion unit (GT2-72CN/72CP) is not connected to the internal circuit.
*2 The orange and green cables are used as analog output cables for the analog type amplifier unit (GT2-71MCN/71MCP). For details, refer to the analog output circuit diagram.
*3 20 to 30 VDC when expansion unit is connected or for the analog type amplifier unit (GT2-71MCN/71MCP).
*4 For details on external input, refer to the external input circuit diagram.

Analog output circuit

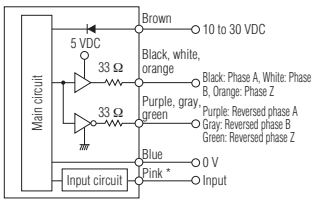
GT2-71MCN/71MCP



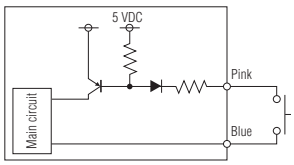
* The green and blue cables are common internally.

Pulse output amplifier unit (GT2-71D)

I/O circuit



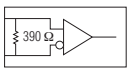
External input circuit



(Short-circuit current: 1 mA max.)

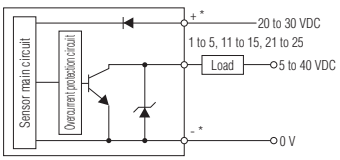
Recommended input device

AM26LS32 line receiver or equivalent device



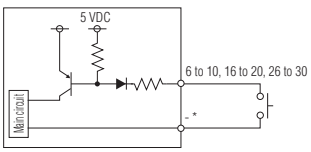
* For details of the external input, refer to the diagram of the external input circuit.

Output circuit of the large display amplifier unit
GT2-100N/GT2-E3N
(Pin Nos. 1 to 5, 11 to 15, 21 to 25)



* The +/- terminals are provided in the GT2-100N only. They are not provided in the GT2-E3N.

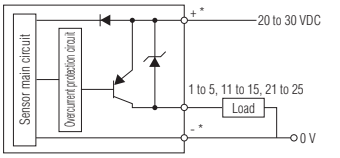
Input circuit of the large display amplifier unit
GT2-100N/GT2-E3N
(Pin Nos. 6 to 10, 16 to 20, 26 to 30)



(Short-circuit current: 1 mA max.)

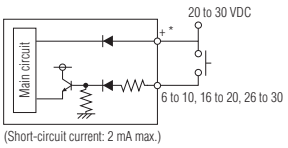
* The - terminal is provided in the GT2-100N only. It is not provided in the GT2-E3N.

Output circuit of the large display amplifier unit
GT2-100P/GT2-E3P
(Pin Nos. 1 to 5, 11 to 15, 21 to 25)



* The +/- terminals are provided in the GT2-100P only. They are not provided in the GT2-E3P.

Input circuit of the large display amplifier unit
GT2-100P/GT2-E3P
(Pin Nos. 6 to 10, 16 to 20, 26 to 30)



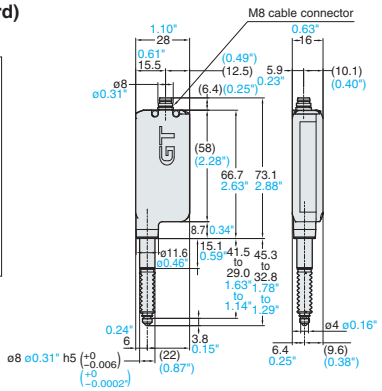
(Short-circuit current: 2 mA max.)

* The + terminal is provided in the GT2-100P only. It is not provided in the GT2-E3P.

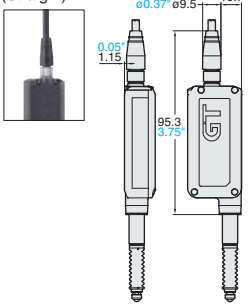
For details of the I/O connector pin assignment and the expansion board, refer to the instruction manual. The information is also available at the KEYENCE home page. **www.keyence.com**

Unit: mm inch

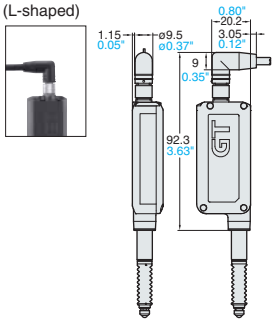
Sensor head (Standard)
GT2-H12K/GT2-H12



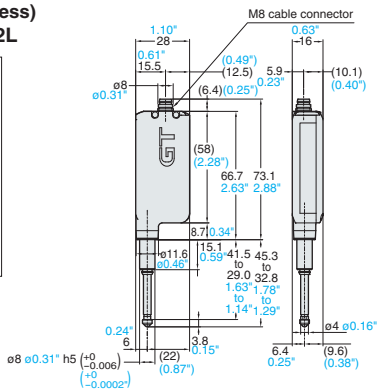
Cable connection
(Straight)



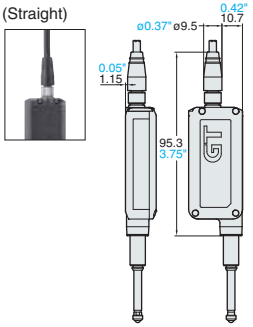
Cable connection
(L-shaped)



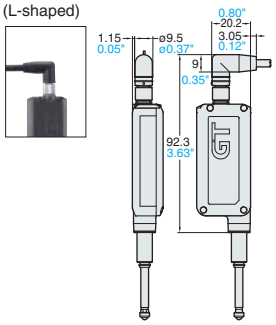
Sensor head (Low stress)
GT2-H12KL/GT2-H12L



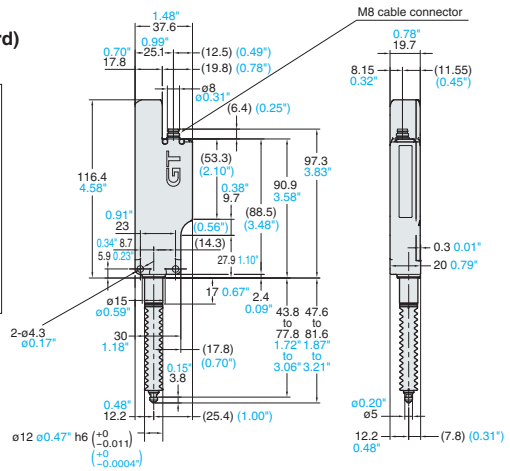
Cable connection
(Straight)



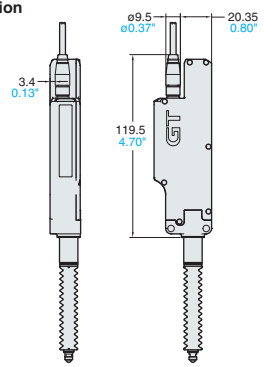
Cable connection
(L-shaped)



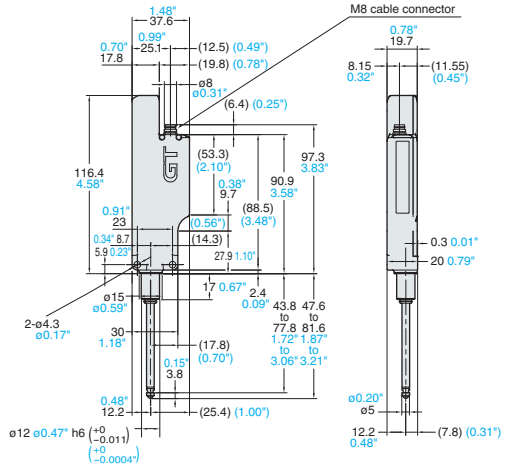
Sensor head (Standard)
GT2-H32



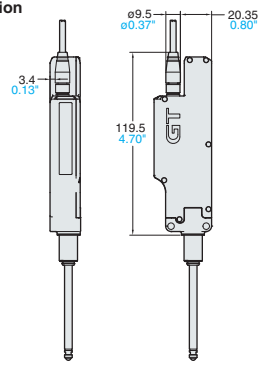
Cable connection
(Straight)



Sensor head
(Low stress)
GT2-H32L

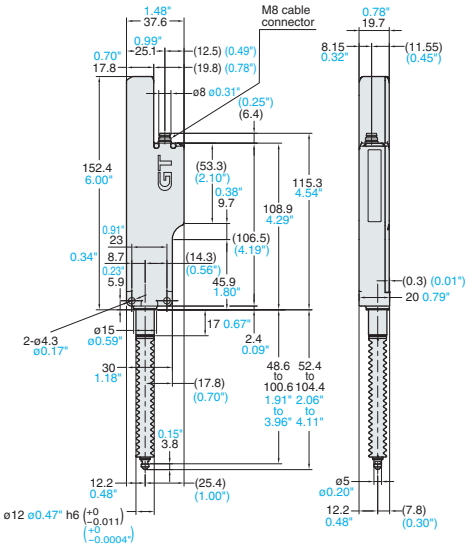


Cable connection
(Straight)

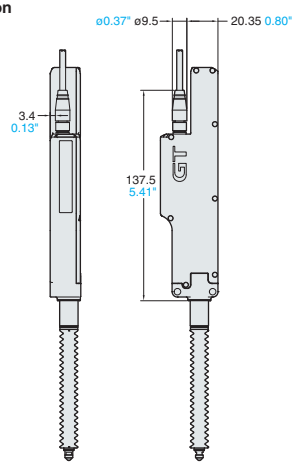


Unit: mm inch

Sensor head (Standard) GT2-H50

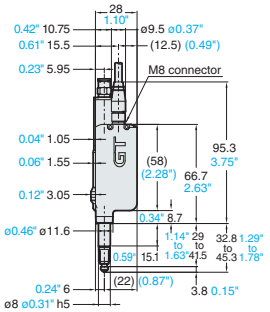


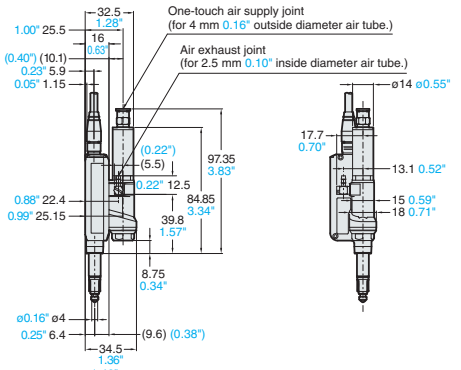
Cable connection (Straight)



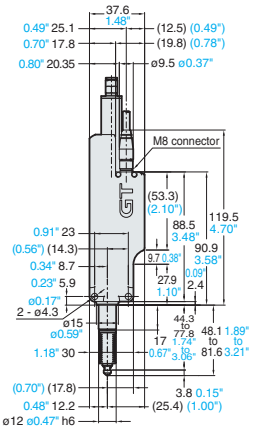
Sensor head (Standard) GT2-A12/GT2-A12K

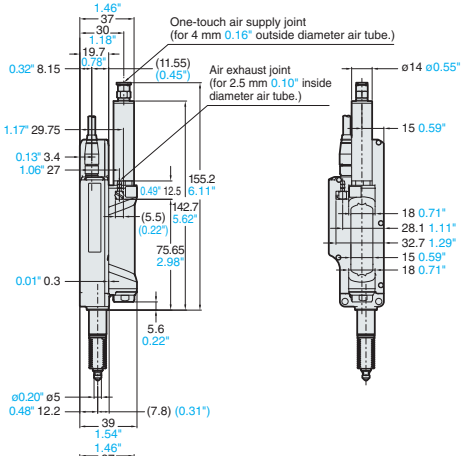
There are no dust boots on the low stress type
GT2-A12L/A12KL



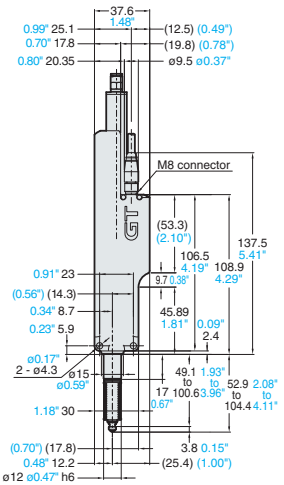


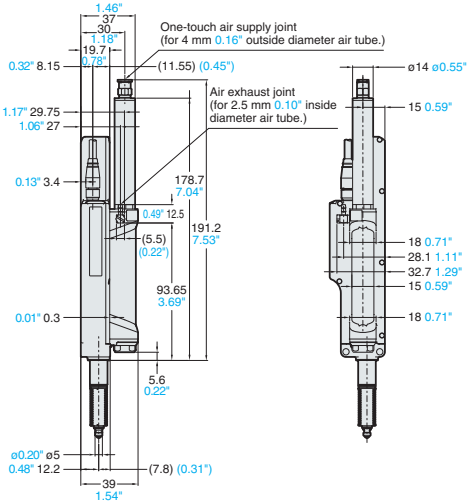
Sensor head (Standard) GT2-A32





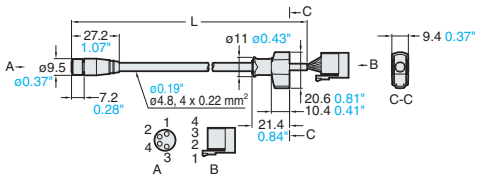
Sensor head (Standard) GT2-A50





Unit: mm inch

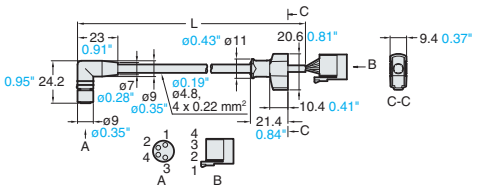
Sensor head cable (Straight)
GT2-CH2M/CH5M/CH10M/CH20M (Optional)



A	B	Sheath color
1	1	Brown
2	3	White
3	4	Blue
4	2	Black

Model	L
GT2-CH2M	2000 78.74"
GT2-CH5M	5000 196.85"
GT2-CH10M	10000 393.70"
GT2-CH20M	20000 787.40"

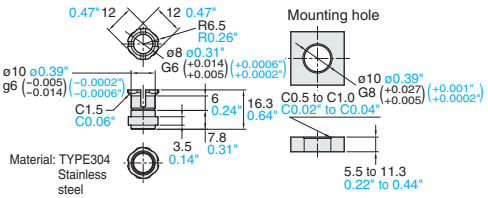
Sensor head cable (L-shaped)
GT2-CHL2M/CHL5M/CHL10M/CHL20M (Optional)



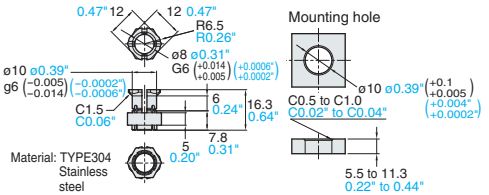
A	B	Sheath color
1	1	Brown
2	3	White
3	4	Blue
4	2	Black

Model	L
GT2-CHL2M	2000 78.74"
GT2-CHL5M	5000 196.85"
GT2-CHL10M	10000 393.70"
GT2-CHL20M	20000 787.40"

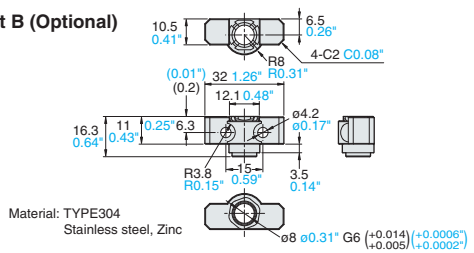
Sensor head mounting bracket A (Optional)
OP-76874



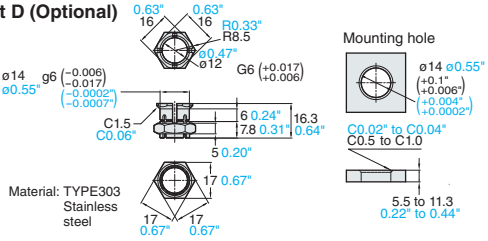
Sensor head mounting bracket C (Optional)
OP-84396



Sensor head mounting bracket B (Optional)
OP-76875



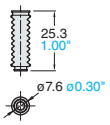
Sensor head mounting bracket D (Optional)
OP-84327



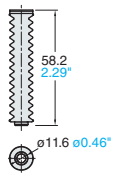
Dust boot

* The dust boot is factory-attached to the sensor head (except for the low stress type).

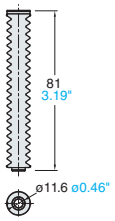
Material: TYPE304
Stainless steel, NBR



For GT2-H12K/ H12/A12K/A12 (Optional) OP-84332



For GT2-H32/A32 (Optional) OP-84459

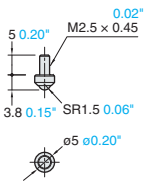


For GT2-H50/A50 (Optional) OP-84460

Unit: mm inch

Contact

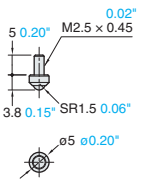
Standard
OP-77678



Standard equipment of the general-purpose sensor head **GT2-H12 (L)/ H32 (L)/H50/ A12 (L)/A32/A50**

Material: TYPE304 Stainless steel
TYPE440C Stainless steel

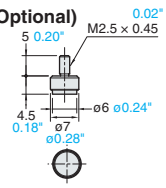
Super-tough
OP-77682



Standard equipment of the high-accuracy type sensor head **GT2-H12K (L)/ A12K (L)**

Material: TYPE304 Stainless steel
Super-tough tungsten alloy

Flat plate (Optional)
OP-77679

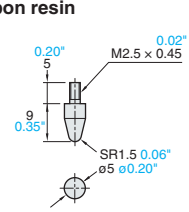


Material: TYPE304 Stainless steel
Super-tough tungsten alloy

Roller (Optional)
OP-77680

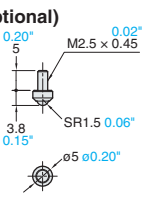
Material: TYPE304 Stainless steel
TYPE440C Stainless steel

Fluorocarbon resin (Optional)
OP-80228



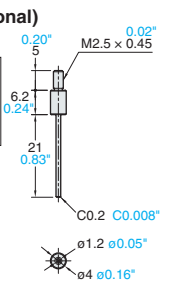
Material: Fluorocarbon resin (PTFE)

Ceramic (Optional)
OP-81970



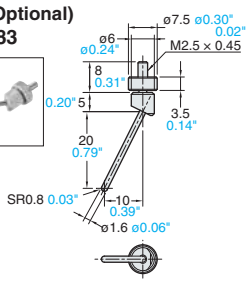
Material: TYPE304 Stainless steel, Ceramic

Needle (Optional)
OP-77681



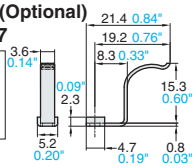
Material: TYPE304 Stainless steel
Super-tough tungsten alloy

Offset (Optional)
OP-77683



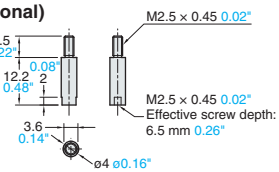
Material: TYPE304 Stainless steel
Super-tough tungsten alloy

Lift lever (Optional)
OP-84397



Material: TYPE304 Stainless steel

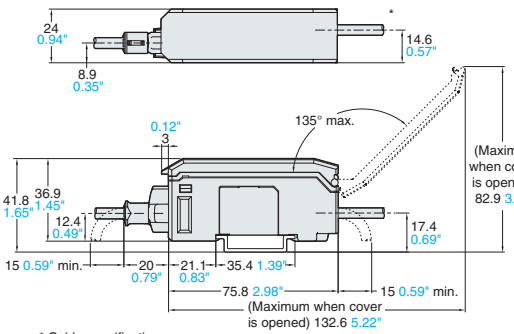
Spacer (Optional)
OP-77684



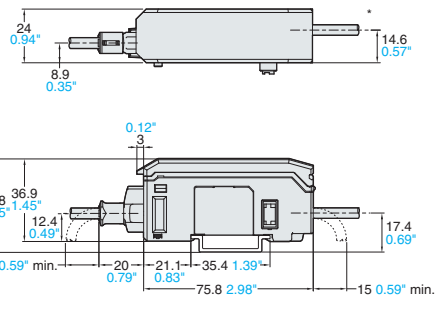
Material: TYPE304 Stainless steel

Amplifier unit
DIN-rail mount type

GT2-71N/71P/71MCN/71MCP/71CN/71CP

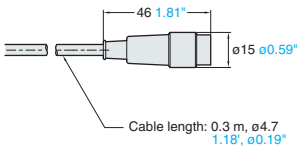


GT2-72N/72P/72CN/72CP

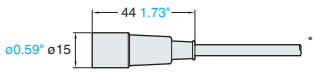


* Cable specifications
GT2-71N/71P: ø4.7 ø0.19", 12-core x Brown/Blue: 0.20 mm², Black/White/Gray/Orange/Green/Pink/Purple/Yellow/Red/Pink purple: 0.15 mm², Cable length: 2 m 6.6'
GT2-72N/72P: ø4.7 ø0.19", 10-core x Black/White/Gray/Orange/Green/Pink/Purple/Yellow/Red/Pink purple: 0.15 mm², Cable length: 2 m 6.6'

GT2-71MCN/71MCP/71CN/71CP/72CN/72CP
Connector
(connector type/analog output type amplifier unit)



GT2-CA2M/CA10M
Connection cable

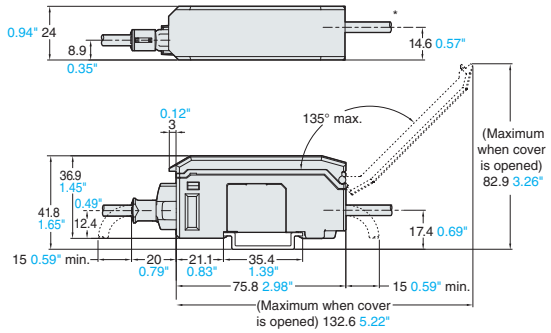


* Cable specifications
Outer diameter: ø4.7 mm ø0.19", Cable length: 2 m 6.6' (GT2-CA2M), 10 m 32.8' (GT2-CA10M),
12-core x Brown/Blue: 0.20 mm², Black/White/Gray/Orange/Green/Pink/Purple/Yellow/Red/
Pink purple: 0.15 mm²

Unit: mm inch

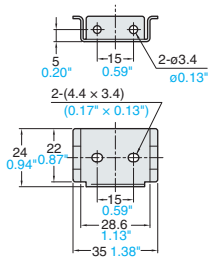
Amplifier unit
Pulse output

GT2-71D



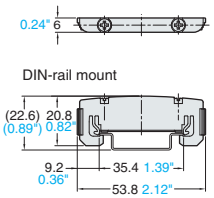
* Cable specifications
Outer diameter: ø4.7 mm ø0.19", Cable length: 2 m 6.6',
9-core x Brown/Blue/Purple/Pink/Orange/Green/Gray/White/Black: 0.15 mm²

Mounting bracket for DIN-rail mount type amplifier (Optional)
OP-76877



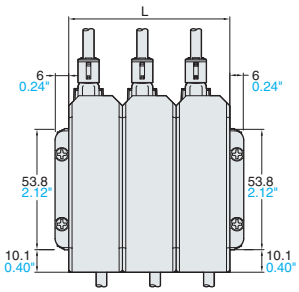
Material: SPCC steel

End unit (Optional) (2 pcs.)
OP-26751



Material: Polycarbonate, Stainless steel

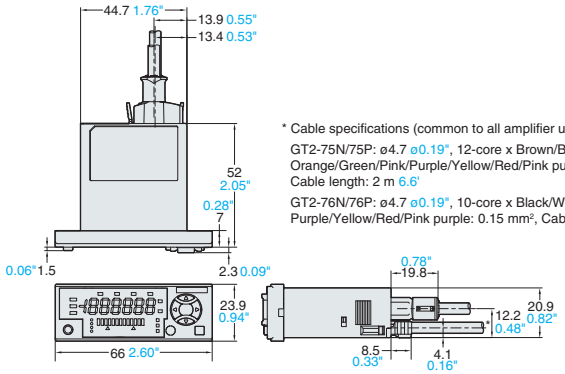
When several units are connected



Number of units	L
1	24 0.94"
2	48 1.89"
3	72 2.83"
4	96 3.78"
5	120 4.72"
6	144 5.67"
7	168 6.61"
8	192 7.56"
9	216 8.50"
10	240 9.45"
11	264 10.39"
12	288 11.34"
13	312 12.28"
14	336 13.23"
15	360 14.17"

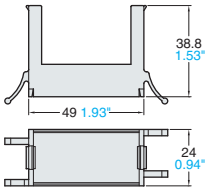
Amplifier unit
Panel mount type

GT2-75N/75P/76N/76P

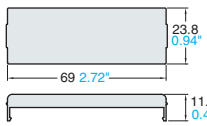


* Cable specifications (common to all amplifier units)
GT2-75N/75P: ø4.7 ø0.19", 12-core x Brown/Blue: 0.20 mm², Black/White/Gray/Orange/Green/Pink/Purple/Yellow/Red/Pink purple: 0.15 mm²,
Cable length: 2 m 6.6'
GT2-76N/76P: ø4.7 ø0.19", 10-core x Black/White/Gray/Orange/Green/Pink/Purple/Yellow/Red/Pink purple: 0.15 mm², Cable length: 2 m 6.6'

Panel mounting bracket (Accessory)
OP-84394

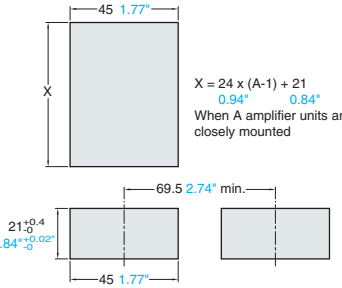


Protective front cover



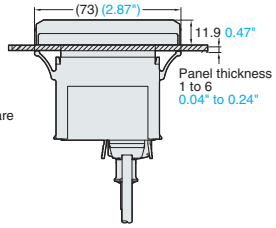
Material: (Mounting bracket) Polyacetal,
(Protective front cover) Polycarbonate

Panel cutout



X = 24 x (A-1) + 21
0.94" 0.84"
When A amplifier units are closely mounted

Panel mounting bracket



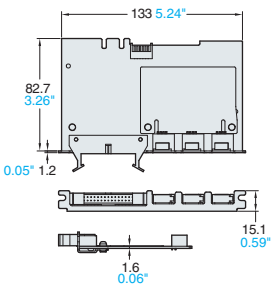
Unit: mm inch

Amplifier unit
Large display
GT2-100N/100P

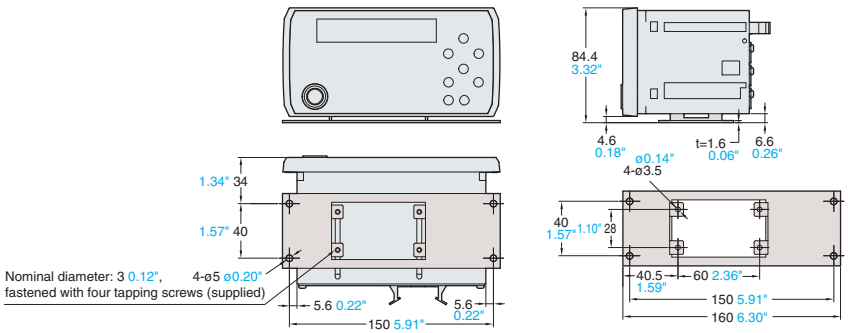
When the supplied mounting bracket is attached

Panel cutout

GT2-E3N/E3P Expansion board



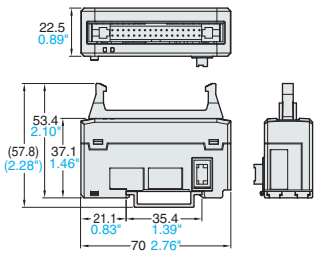
When the optional mounting bracket (OP-84331) is used



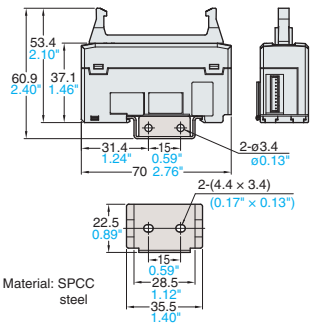
Communication unit
BCD output type
DL-RB1A

34-pin MIL connector

DIN-rail mount

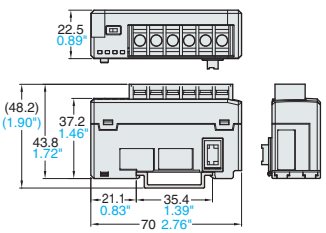


When the mounting bracket is attached (Optional)
OP-60412

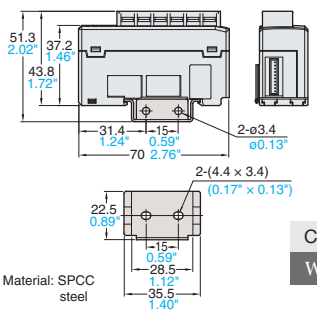


Communication unit
RS-232C communication type
DL-RS1A

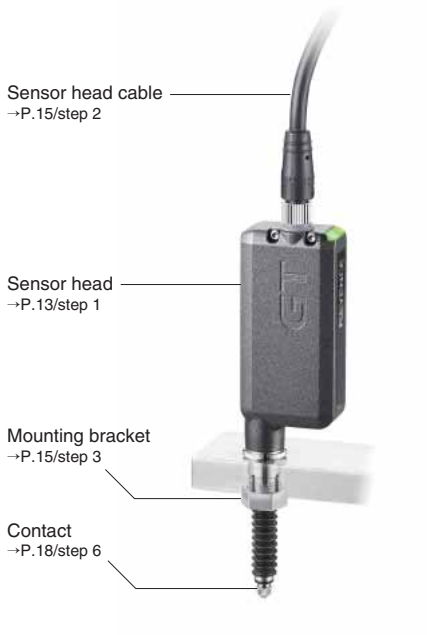
DIN-rail mount



When the mounting bracket is attached (Optional)
OP-60412



Product configuration



Display unit (amplifier unit)
→P.16/step 4-5

Communication unit
→P.18/step 7-8

Reference

Calculation functions using expansion units

The GT2-70 Series* enables calculations such as the maximum and the minimum values of several detection points when several expansion units (up to 14 units) are connected to a main unit. Outline of each calculation function is as follows:

No.	Calculation function	Description	Number of connectable expansion units	
			Calculation mode	Dedicated Calculation mode
C1	Maximum value	Displays the maximum value of the values of the main unit and expansion unit(s).	1 to 14 units	2 to 14 units
C2	Minimum value	Displays the minimum value of the values of the main unit and expansion unit(s).		
C3	Degree of flatness	Displays the difference between the maximum and the minimum value of the main unit and expansion unit(s).		
C4	Average	Displays the resulting calculation of the average of the main unit and expansion unit(s).		
C5	Reference difference	Displays the difference obtained by subtracting the display value of the main unit from each of the expansion unit(s).		Not selectable
C6	Twist	Displays the degree of twist calculated from the values of four sensor heads.	Only 3 units	Only 4 units
C7	Warpage	Displays the degree of warpage calculated from the values three sensor heads.	Only 2 units	Only 3 units
C8	Thickness	Displays the thickness calculated by two sensor heads "sandwiching" a target between them.	Only 1 unit	Only 2 units

* Except GT2-71D.

About "Calculation mode"

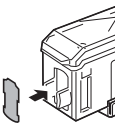
When "Calculation mode" is selected for "A1: Calculation mode", the main unit outputs a calculation result, and output of the expansion unit is OFF. (Except for a case where "C5: Difference from reference display" is selected)

NOTE - The calculation mode can be selected for the main unit to which one or more expansion units are connected.

About "Calculation dedicated mode"

When "Calculation dedicated mode" is selected for "A1: Calculation mode", only the main unit outputs a calculation result, and the expansion unit outputs a judgment result based on each setting.

NOTE
- The calculation dedicated mode can be selected for the main unit to which two or more expansion units are connected.
- When the calculation dedicated mode is selected, "C5: Reference Difference" cannot be selected for calculation method.
- When the calculation dedicated mode is selected, a sensor head cannot be connected to the main unit. Attach the supplied "sensor head connector seal" to the sensor head connector of the main unit.



Bank function

With the Bank function, up to four patterns of HH, HIGH, LOW and LL set values, preset values can be registered in advance.
Since the registered settings (four patterns) can be easily changed, this function is useful for detection of several targets.

About accuracy of the high-accuracy type

When the high-accuracy type measures a distance between two arbitrary points in the measuring range at an ambient temperature (20°C (68°F)), the deviation from the actual value is 1 µm 0.04 Mil or less. For example, when a measurement result is 11 mm 0.43", the actual value is in a range of 10.999 to 11.001 mm 0.4330" to 0.4331". For several measurements, variations in the measured value are 1 µm 0.04 Mil or less.

5-output function (Except GT2-71MCN/71MCP)

This function enables differentiation of five output statuses (HH, HIGH, GO, LOW and LL). HH and LL outputs can also be used for jam detection.

General purpose digital contact sensor

GT Series

Features

[Easy setup]

Head installation is as easy as drilling a hole.

[Easy programming]

Auto-tuning function enables simple, sensor-like tuning.

[Smart operation]

Self-diagnostic function outputs an alarm when the sensor head cable becomes damaged

CE

Setup

Amplifier units

Model	Appearance	Type		Output type
GT-71A		DIN rail mount	Main unit	NPN
GT-72A			Expansion unit	
GT-71AP			Main unit	PNP
GT-72AP			Expansion unit	
GT-75A		Panel mount	Main unit	NPN
GT-76A			Expansion unit	
GT-75AP			Main unit	PNP
GT-76AP			Expansion unit	

BCD output / RS-232C communication unit

Model	Appearance	Type
DL-RB1A		BCD
DL-RS1A		RS-232C

Standard model

Shortest in its class

Total length 90 mm 3.54"

Smallest length among the 10-mm 0.39" stroke type sensor heads

10-mm 0.39" stroke sensor head

GT-H10

22-mm 0.87" stroke sensor head

GT-H22

Low Stress model

10-mm 0.39" stroke, low stress sensor head

GT-H10L

22-mm 0.87" stroke, low stress sensor head

GT-H22L

Air Push model

10-mm 0.39" stroke air push type sensor head

GT-A10

22-mm 0.87" stroke air push type sensor head

GT-A22

NEW

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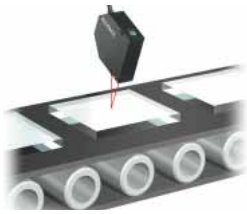
Laser Displacement (1D) LK-G Series

- Sampling rate of 50 kHz
- Linearity of ± 0.02% of F.S.
- Repeatability down to 0.01 µm 0.0004 Mil

Measuring the thickness of a silicon wafer



Measuring the thickness of a glass plate

Thickness measurement/loop control of a rubber sheet

Measuring the displacement of a rotating shaft

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