



High-Accuracy Digital Contact Sensor  
GT2 Series

EtherNet/IP™ DeviceNet™

EtherCAT™ PROFINET® PROFINET®

USB TCP/IP



TOUGH  
ACCURATE  
EASY

Ultra-compact



GT2 Series

# HIGH QUALITY & RELIABILITY



## History of KEYENCE Digital Contact Sensors

Since launching in 1990, KEYENCE digital contact sensors have incorporated advanced technology and continuously claimed a position as industry leaders with every model. KEYENCE's unique measurement principle results in higher accuracies and greater on-site usability. In addition, continuous improvements to the structure have provided the sensors with unparalleled durability.

With products being introduced around the world, KEYENCE's digital contact sensors are used by a large number of customers all over the globe.

HISTORY	1990	1992
SERIES	AT1 Series	AT2 Series
SENSOR LINEUP	3	7
DETECTION SYSTEM	LVDT	
ENCLOSURE RATING		
DURABILITY		
RELEASE COUNTRIES	1	



## HIGH ACCURACY

- Indicated accuracy: 1 μm
- Resolution: 0.1 μm
- High accuracy throughout the entire measuring range



## TOUGH & RUGGED CONSTRUCTION

- Dustproof, watertight, and oil-resistant
- Over 200 million cycles
- Flexible free-cut robot cable



## EASY TO USE

- Simple, easy-to-use PC application software
- Varied lineup of sensor heads capable of handling a variety of installation environments and tight spaces
- Wide range of options, including mounting adapters to reduce labor during installation



## SERVICE & SUPPORT

- Fast shipping -Keep downtime to a minimum with same day shipping-
- Direct Sales Network
- Global Service Network



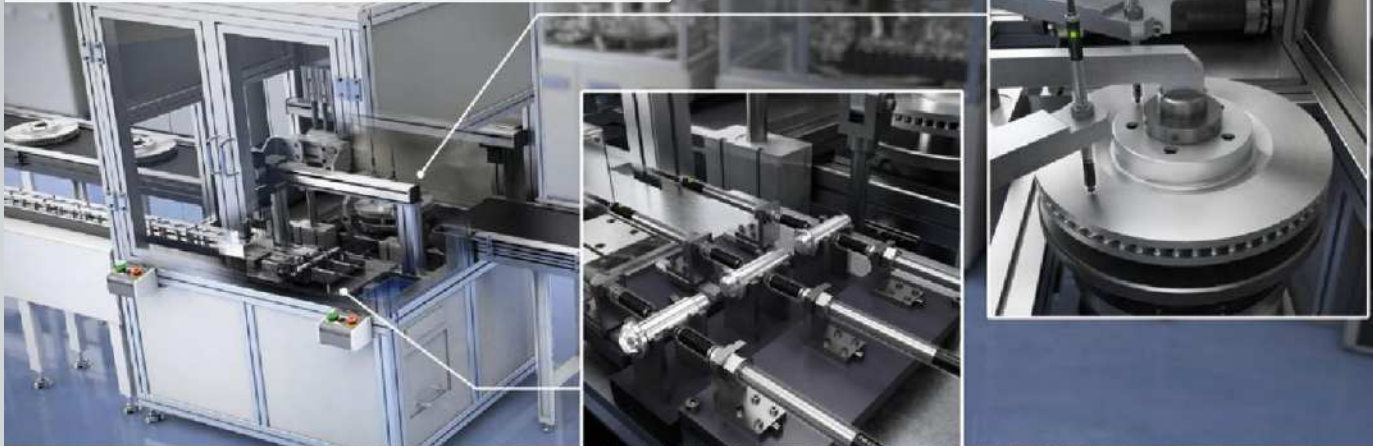
1997                      2002                      2004                      2006                      2008                      2012                      2014                      2016                      NOW

1997	2002	2004	2006	2008	2012	2014	2016	NOW
AT3 Series		ATV Series	GT Series	GT2 Series	GT2 Series Flange type	GT2 Series Pencil type		GT2 Series Short-range type
10		18	24	37	41	51		53
				Scale Shot System		Scale Shot System II		
IP67							IP67G	
		10 million		20 million		100 million	200 million	
	2	5	25	31				



# Connect to Anything, Anywhere

**Inline automatic machines: Automatic conveyance**

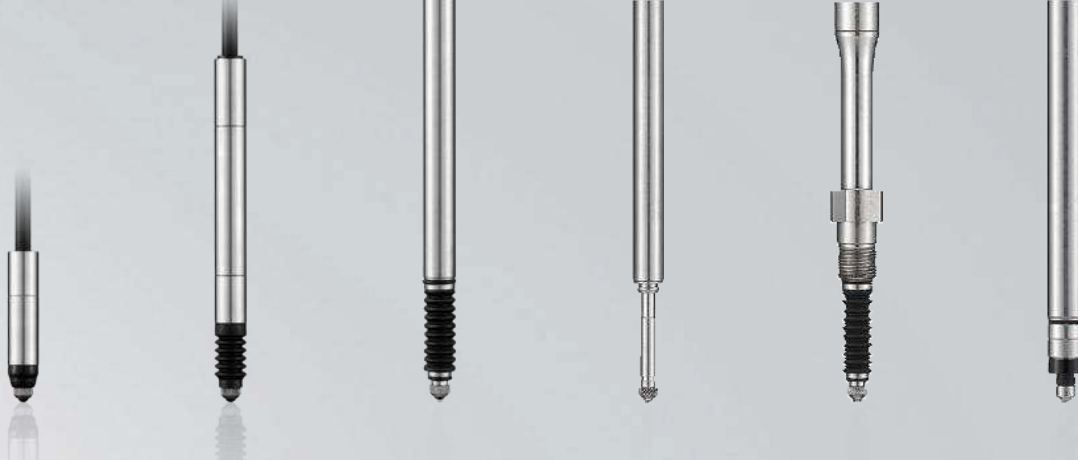


**Semi-automatic machines: Manual conveyance**



**Offline inspection equipment/stations: Manual conveyance**





**■ HIGH ACCURACY WITH DETECTION PRINCIPLES GUARANTEED TO PREVENT TRACKING ERRORS**

The GT2 Series adopts the new Scale Shot System II detection principle. This provides users with peace of mind even when used on equipment with short cycle times.

**■ EXCELLENT ENVIRONMENTAL RESISTANCE AND LONG SERVICE LIFE**

Thanks to a NEMA Type 13/IP67G enclosure rating, there's no need to worry about the installation environment. In addition, the long service life with a detecting durability of over 200 million cycles reduces maintenance work resulting from sensor head damage.



**■ FLEXIBLE FREE-CUT ROBOT CABLE & OIL-RESISTANT RELAY CONNECTOR**

The cable between the relay connector and amplifier unit uses a flexible free-cut robot cable. An oil-resistant cable is also available.

**■ SUPPORT FOR A VARIETY OF OPEN FIELD NETWORKS**

The GT2 Series' lineup of communication units allow communication with PLCs from various manufacturers.



**TCP/IP**

**RS-232C**

**BCD**



**■ EASILY CUSTOMIZABLE**

Using the dedicated application software (GT-Monitor 2), data can be obtained in accordance with the inspection target. The software also allows for easy configuration of settings for various calculations.

**■ EASY CONNECTION TO PCs**

The GT2 Series includes USB-type devices for easy connection to PCs at inspection stations and other locations.



**■ SIMPLE SYSTEM CONFIGURATION**

The GT2 Series makes it possible to use trigger inputs and judgment result outputs through a USB connection. Simple inspection systems can be created quickly and easily.

## Scale Shot System II:

A new detection principle completely free of tracking errors

The absolute value scale, with different slit patterns engraved according to position, is captured at high speed with a high-resolution CMOS sensor. This world's first detection principle delivers the highest accuracy in its class with no tracking errors during high-speed movement.

### Highest accuracy in its class

RESOLUTION

**0.1  $\mu\text{m}$**

INDICATED ACCURACY

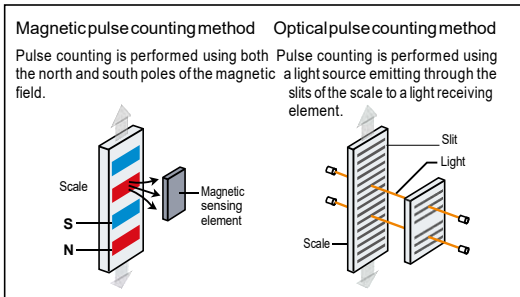
**1  $\mu\text{m}$**



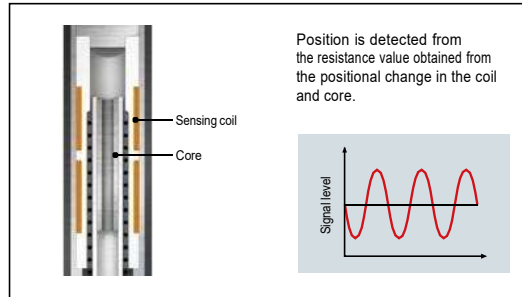
CMOS sensor detects the position of the absolute value scale.

## PROBLEMS WITH CONVENTIONAL TYPES

### SCALE (PULSE-COUNT) METHOD



### DIFFERENTIAL TRANSFORMER METHOD



Tracking errors

Origin position unknown

Unstable accuracy throughout entire measuring range

Poor temperature characteristics

## RESOLVED WITH THE SCALE SHOT SYSTEM II

No tracking error

Origin position recorded

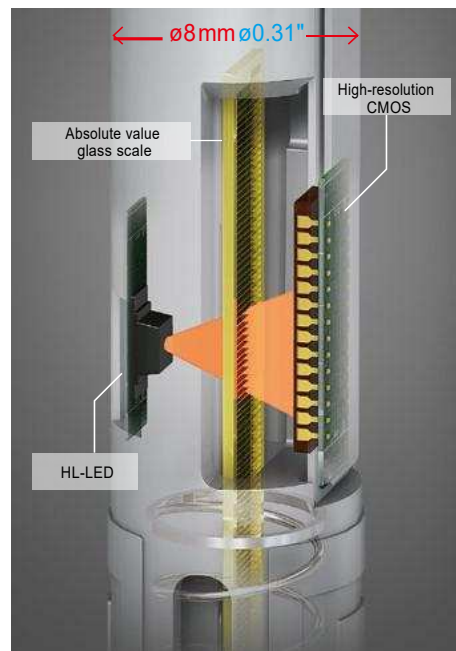
Full-range high accuracy

Stable temperature characteristics

### Technology of the Scale Shot System II

This innovative system was created based on KEYENCE's newly developed technology. High-intensity illumination from HL-LEDs reliably emits light through the absolute value scale to a high resolution CMOS. Output signals are calculated by the I-Processor, which allows for constant position recognition. All these features are integrated into a slim 8 mm 0.31" diameter body.

HL-LED	These newly developed point light source LEDs provide even, high-intensity illumination which is 9 times more intense than conventional models. *HL: High Luminance
HIGH-RESOLUTION CMOS	With high sensitivity, this imaging element receives the LED light that passes through the absolute value glass scale and generates output signals with resolution twice that of conventional models.
I-PROCESSOR	This customized IC is equipped with a new algorithm that performs high-speed, high-resolution calculation of the output signals transmitted from the CMOS sensor.





# USABLE IN OILY ENVIRONMENTS

\*GT2-P12K (F)/P12 (F)

First in class

## NEMA Type 13/IP67G

The sensor head, including the connector and cable section, complies with two standards - NEMA Type 13 and IP67G. The sensor head can be mounted almost anywhere, even in environments with splashing water or oil.

### Oil-resistant connector and cable

Both the sensor head and connector comply with NEMA Type 13/IP67G. Extremely oil-resistant PUR (polyurethane) is used for the GT2-sensor cable to reduce the risk of oil penetration.

### Seamless construction

The sensor body is cast in one piece for seamless outer construction. Corrosion from water and oil is reduced due to the fully enclosed structure.

### NEMA Type 13

NEMA (National Electrical Manufacturers Association) specifies the classification and description of enclosures for electrical equipment. The classification is represented as the "Type", and NEMA Type 13 is designed to provide a degree of protection against the ingress of oil.

### IP67G

IP67G represents the enclosure rating for electronic devices as defined by the JIS (Japanese Industrial Standards). IP67G represents "IP67" as defined by the IEC (International Electrotechnical Commission) with "G" added for its oil resistance.





# EXTRAORDINARY DETECTING DURABILITY

\*GT2-P12K (L/F)/P12 (L/F)

## OVER 200 million cycles

Due to new high-strength linear ball bearings in the spindle, the detecting durability has been increased to over 200 million cycles. This can greatly reduce maintenance costs and replacement efforts.

### ■ Long lasting linear ball bearings

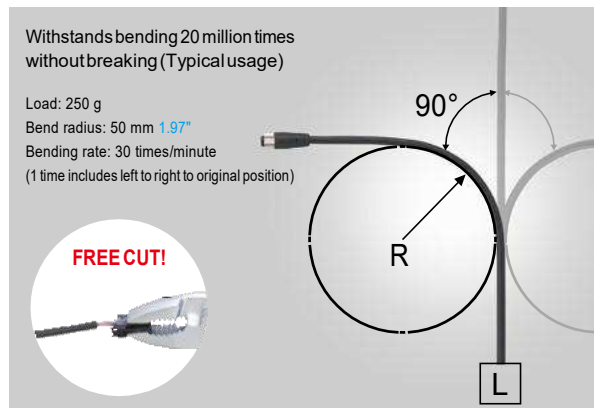
The all stainless steel construction of the spindle structure (shaft & bearings) reduced the weight of the GT2. Through these weight savings, wear due to friction inside the spindle has been minimized. This has dramatically increased endurance.



## FLEXIBLE FREE-CUT ROBOT CABLE & OIL-RESISTANT RELAY CONNECTOR

The cable between the relay connector and amplifier unit uses a flexible free-cut robot cable that withstands continuous bending. This allows the sensor to be installed on moving equipment. A detachable relay connector system is also used. This can greatly reduce replacement work during maintenance.

### ■ Flexible free-cut robot cable



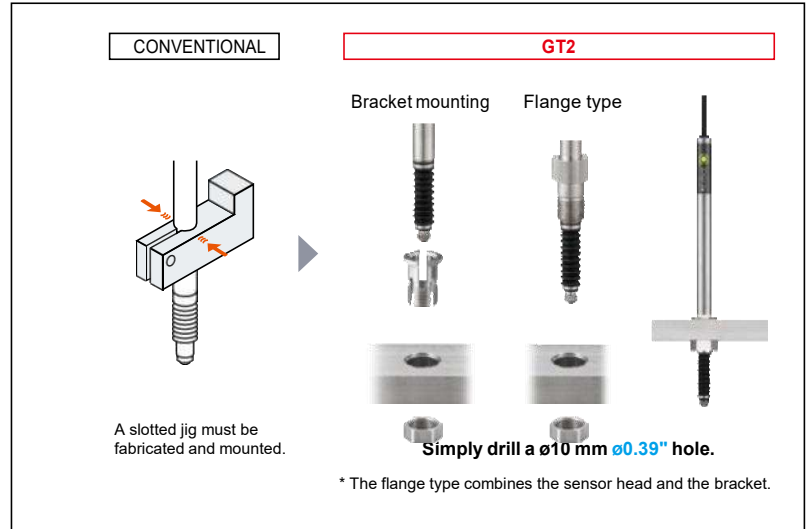
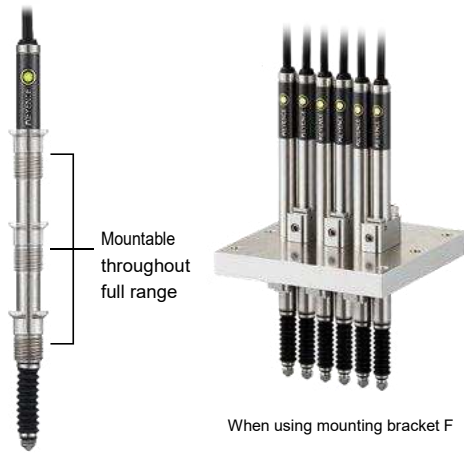
### ■ Detachable sensor head cable



## COST REDUCING MOUNTING METHODS

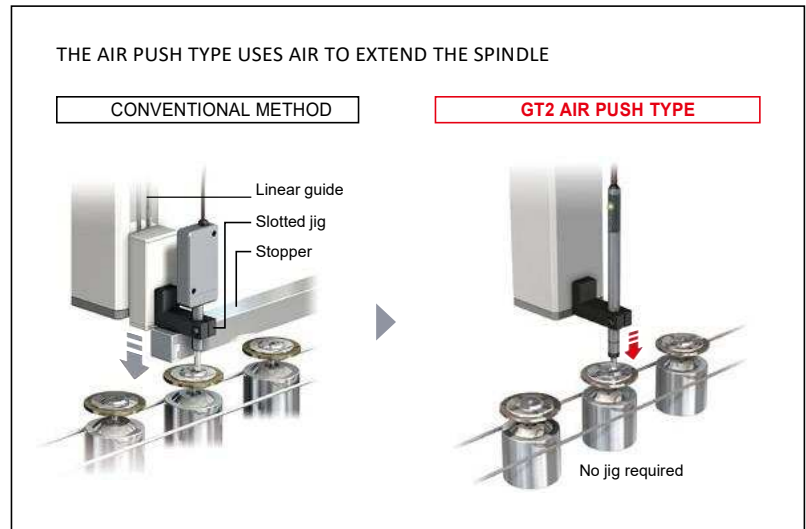
### Greatly reduces design and fabrication time

The sensor can be mounted almost anywhere thanks to  $\varnothing 8$  mm  $\varnothing 0.31$ " slim body that can be mounted anywhere along its body. If you use one of the dedicated brackets, you do not need to fabricate a slotted jig. The flange type can also be directly mounted by simply drilling a  $\varnothing 10$  mm  $\varnothing 0.39$ " hole.



### Air push type requires no drive mechanism

Measurements can be performed with the sensor head secured in place, so no mechanism is required to move the sensor head itself. This allows for space-saving installation which can greatly reduce costs at initial setup. Plus any worries about variations in accuracy due to the jig are eliminated.



# COMPACT SENSOR HEAD FOR SPACE-SAVING INSTALLATION

## ■ HIGH-ACCURACY DIFFERENTIAL TRANSFORMER METHOD

Using KEYENCE's proprietary QMC transformer method, both the waveform amplitude and phase displacement can be detected, canceling out individual variations and temperature characteristics in order to achieve higher accuracy. \*QMC = Quality Monitoring & Controlling

## ■ HIGHLY VISIBLE RELAY AMPLIFIER

The GT2 Series includes an operation indicator light that can display a judgment result or the operation status. This indicator makes it possible to view judgment results or operation statuses at a glance even from a distance.

## ■ POSITION INDICATOR

The position indicator lights up at the measurement center position, allowing for easy position adjustment even for types with a short measurement range.

## Highest accuracy in its class

RESOLUTION

**0.1  $\mu\text{m}$**

INDICATED ACCURACY

**1  $\mu\text{m}$**

1 mm  
0.04"  
type

Ultra-compact

5 mm  
0.20"  
type

Conventional types

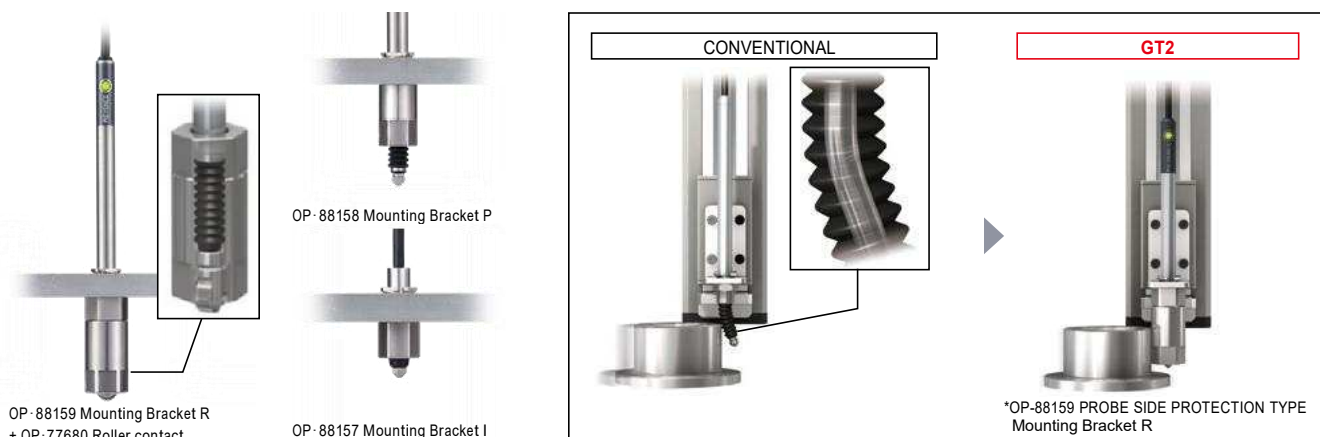
12 mm  
0.47"  
type

## Excellent IP67G Environmental Resistance Rating

# OVERLOAD SUPPORT

## ■ PROTECTION MOUNTING BRACKETS

KEYENCE provides mounting brackets designed to prevent damage when horizontal force is applied to the spindle and when force from the spindle indentation direction is applied to the sensorhead.



# VARIOUS TYPES OF COMMUNICATION

## PC CONNECTION

→P13



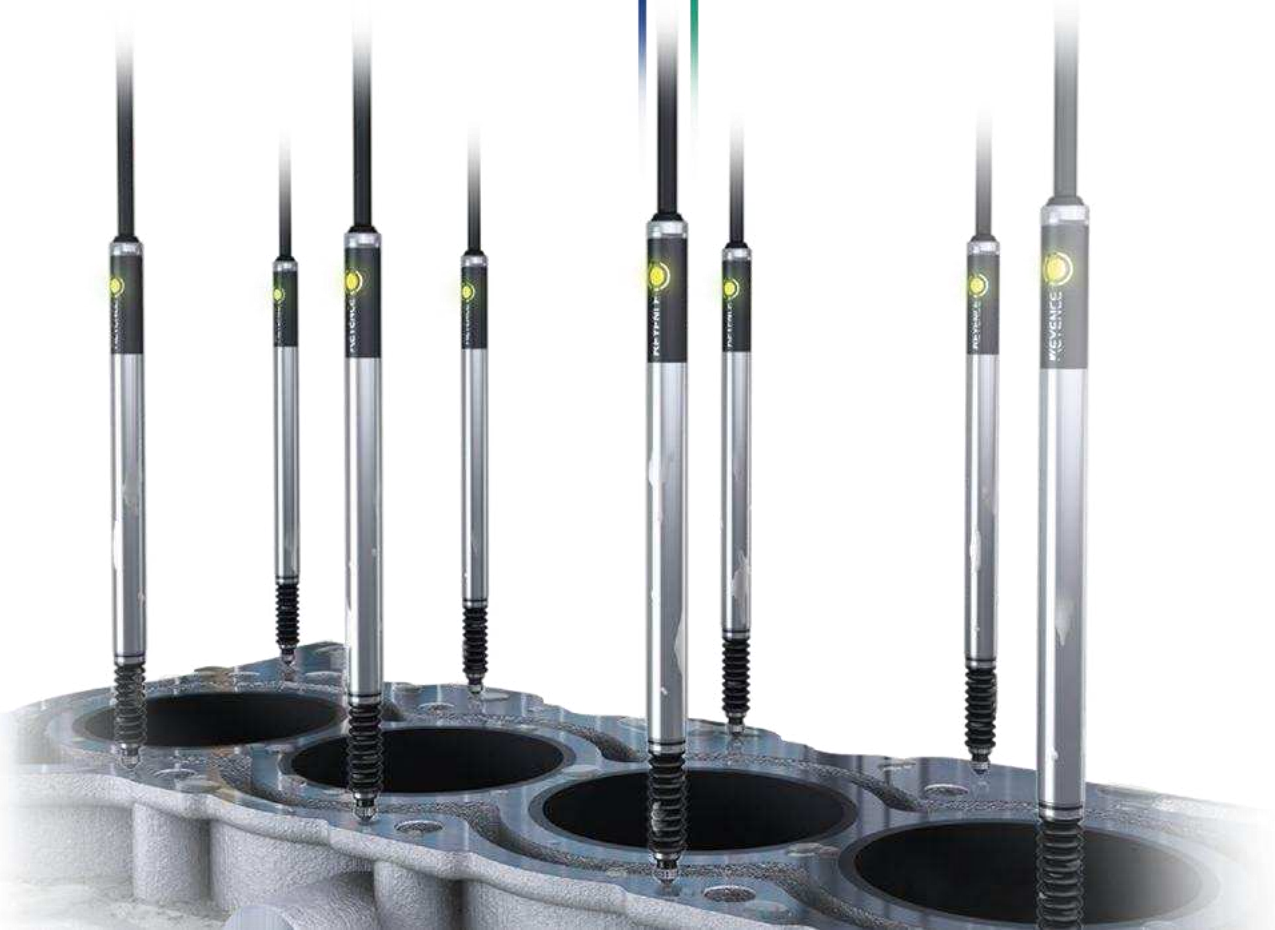
USB  
TCP/IP  
RS-232C

## PLC CONNECTION

→P17



EtherNet/IP™    DeviceNet  
CC-Link V2    RS-232C    BCD  
TCP/IP    EtherCAT™





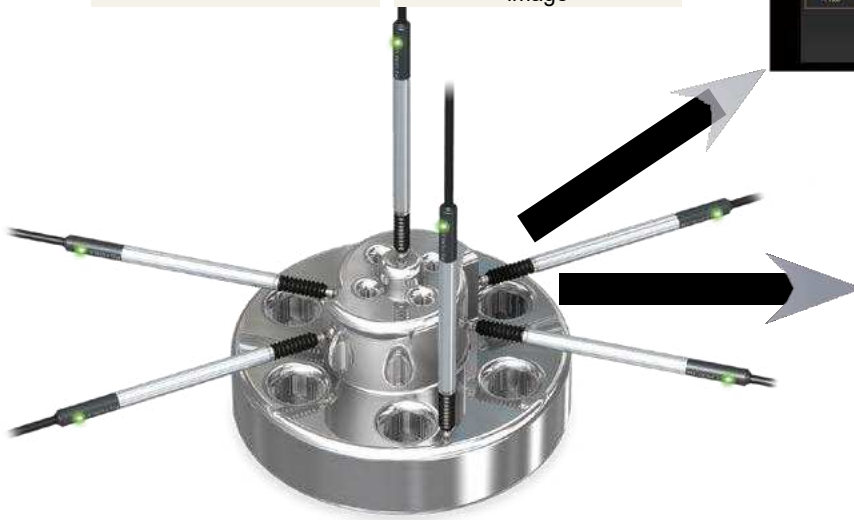
## PC CONNECTION

# PC APPLICATION: GT-Monitor 2 GT-H2

### Easy selection & customization

#### Displayable items

Measured values	Separate judgment results
Calculated values	Bar graphs
Total judgment result	Externally captured image



The PC software display can be customized freely and easily to match the inspection details. Using an image of the actual target in the display makes it possible to connect the measurement locations to each sensor at a glance, even for inspections that use multiple sensors. Even first-time users of this intuitive software can configure settings smoothly.

### Simple set-up

After opening the software, simply select the equipment in order to identify connected sensor heads automatically. Monitoring of measured values and OK/NG judgments can be configured in just three steps.

**STEP 1** Select device

**STEP 2** Set tolerance

**STEP 3** Start monitoring





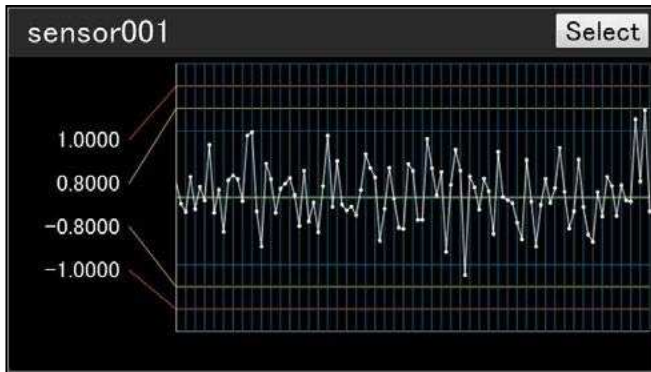
## PC CONNECTION

# FUNCTIONALITY

### VARIOUS STATISTICAL FUNCTIONS

The GT-Monitor 2 dedicated software comes standard with graph display and histogram view functions. These functions allow the devices to not only be used for measurement and inspection but also the data to be analyzed and statuses to be viewed at certain times or per lot using software. In addition, test results can be visually confirmed immediately, making trend management and predictive maintenance easy.

Graph display function

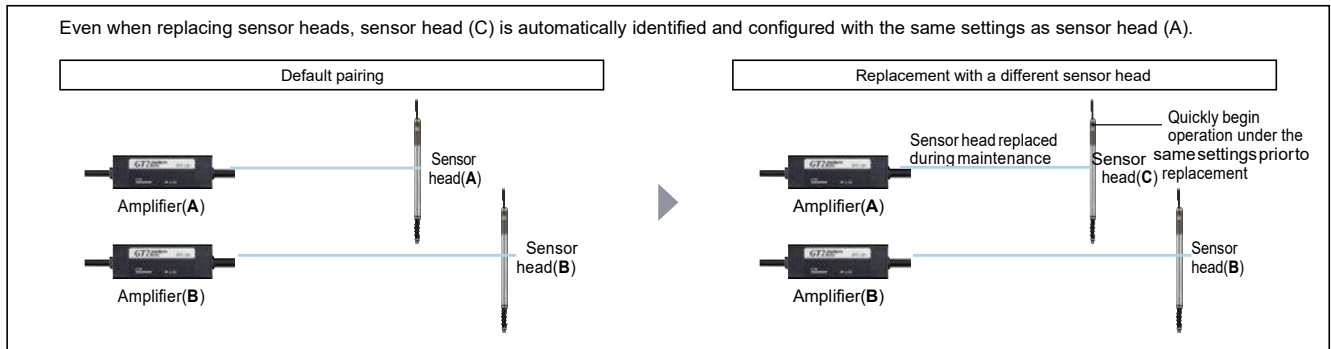


Histogram view function



### AUTOMATIC SENSOR HEAD IDENTIFICATION Industry First

Once a sensor head is connected, it is automatically added to memory. This allows for automatic identification and thus eliminates the need to reconfigure settings during maintenance or tooling changes. In addition, in the event of an equipment failure, settings configured before replacement can be directly applied to the new sensor head, allowing operation to continue right away. \*GT2-UB1 only.



### USER-DEFINED OPERATIONS FUNCTION

Calculations can be performed freely using four arithmetic operations, the trigonometric function, and the inverse trigonometric function. This offers even more freedom to arrange the calculations to suit the measurement targets.

Users can also easily perform calculations that required creation of complex programs when using conventional models.



## REAL-TIME AND Excel® TRANSMISSION FUNCTION

Real time data conversion, as well as live updating of Excel® worksheets is possible. Creating templates in advance makes creating reports simple.

\* CSV format is also supported.



Transmitted in  
real time

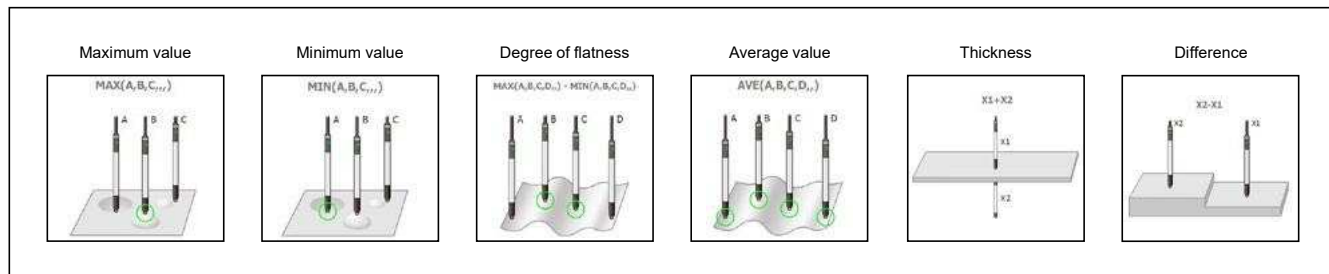


Quality Assurance Data											
OK		Accessible Quality Level		sensor001	sensor002	sensor003					
		reference level	High/Low	0.2000	0.2000	0.2000					
		product maintenance	High	0.1800	0.1800	0.1800					
		reference level	Low	0.1900	0.1900	0.1900					
		reference level	Low/High	0.2000	0.2000	0.2000					
		Amount of Products		sensor001	sensor002	sensor003					
		OK	45	45	45						
		NG	2	2	2						
		Total	45	45	45						
No.	Date	Time	Total	Mean	Max	Min	Max	Min	Max	Min	Max
1	Jul15,2016	17:26:41	231	OK	-0.0016	-0.0008	0.0018	OK	OK	OK	OK
2	Jul15,2016	17:26:56	159	OK	-0.0005	-0.0005	0.0002	OK	OK	OK	OK
3	Jul15,2016	17:27:04	848	OK	-0.0014	-0.0005	-0.0014	OK	OK	OK	OK
4	Jul15,2016	17:27:11	989	OK	-0.0018	-0.0015	-0.0010	OK	OK	OK	OK
5	Jul15,2016	17:27:15	148	OK	-0.0022	-0.0017	0.0010	OK	OK	OK	OK
6	Jul15,2016	17:27:18	957	OK	-0.0019	-0.0004	-0.0020	OK	OK	OK	NG
7	Jul15,2016	17:27:23	695	NG	-0.0022	-0.0021	-0.0010	OK	OK	OK	OK
8	Jul15,2016	17:27:27	624	OK	-0.0022	-0.0020	-0.0007	OK	OK	OK	OK
9	Jul15,2016	17:27:29	421	OK	-0.0024	-0.0001	-0.0005	OK	OK	OK	OK
10	Jul15,2016	17:27:35	711	OK	-0.0007	-0.0004	-0.0010	OK	OK	OK	OK
11	Jul15,2016	17:27:31	911	OK	-0.0007	-0.0001	-0.0009	OK	OK	OK	OK
12	Jul15,2016	17:27:33	176	OK	-0.0012	-0.0014	-0.0011	OK	OK	OK	OK
13	Jul15,2016	17:27:38	625	OK	-0.0004	-0.0002	-0.0008	OK	OK	OK	OK
14	Jul15,2016	17:27:37	634	OK	-0.0017	-0.0001	-0.0005	OK	OK	OK	OK
15	Jul15,2016	17:27:41	320	OK	-0.0020	-0.0004	-0.0001	OK	OK	OK	OK

\* Excel is either a registered trademark or trademark of Microsoft Corporation in the United States and/or other countries.

## CALCULATION FUNCTIONS

Calculation functions—such as thickness, flatness, and subtraction—come standard. Calculations can also be performed using values calculated by multiple sensor heads, which was impossible with conventional sensor amplifiers.



## SUPPORT FOR MULTIPLE LANGUAGES

The GT-Monitor2 dedicated software supports eight languages: English, German, Japanese, Chinese (simplified Chinese fonts), French, Italian, Spanish, and Portuguese.

This allows the devices to be used in almost any country without worrying about the language.

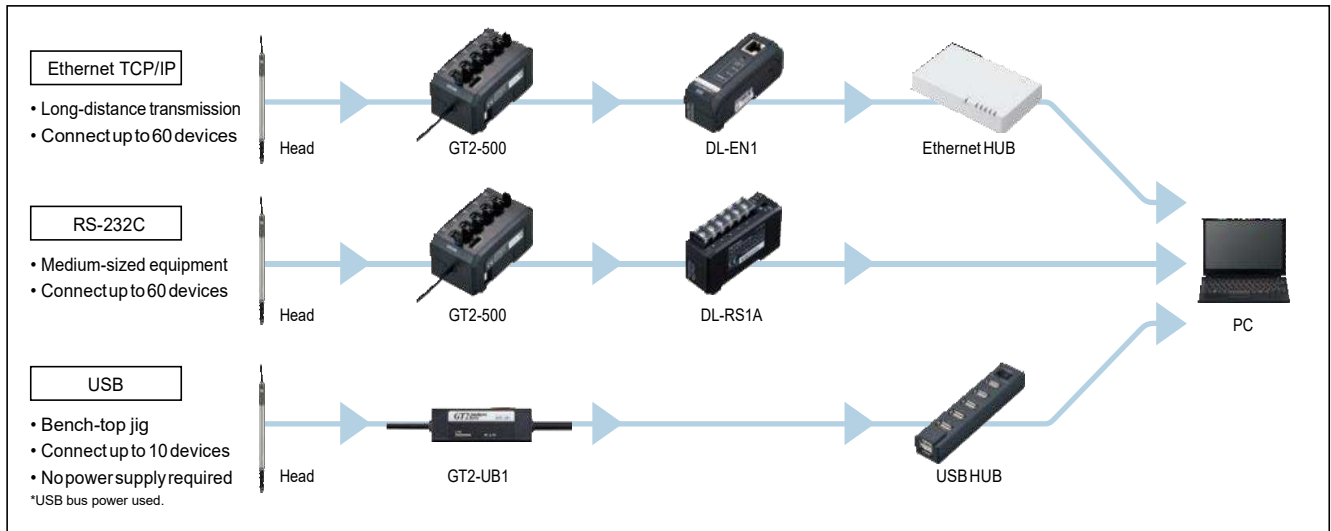


## PC CONNECTION

### PC CONNECTION

#### EASY PC CONNECTION THROUGH A VARIETY OF CONNECTION METHODS

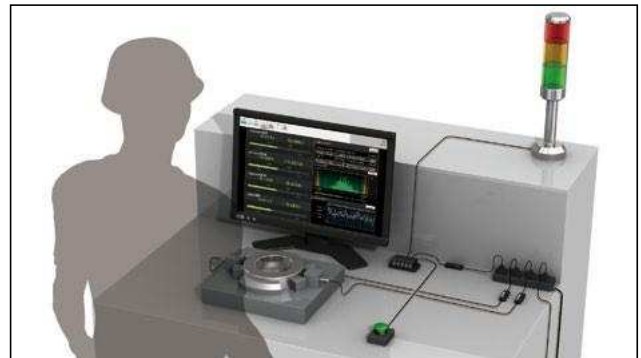
With the GT2 Series, the connection method can be chosen according to the number of connected devices and the transmission distance. In addition, using the dedicated software (GT-Monitor 2: GT2-H2) eliminates the need to create programs required for inspection.



#### USB Connection

The GT2 Series includes a USB input/output unit (DL-NS1) that makes creating small-scale systems easy. Push-button input for judgment timing and outputs for OK/NG determination can be done via USB, greatly reducing amount of time spent on system setup.

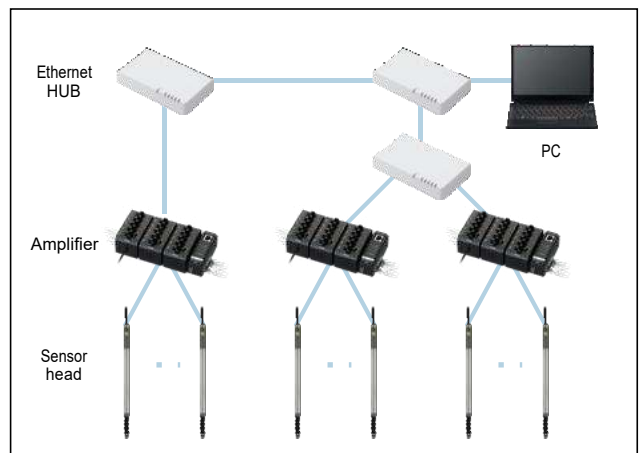
\* When more than 10 units are connected, the connection could be limited depending on the PC's settings. Please contact your nearest KEYENCE office for further information.



#### TCP/IP (Ethernet) CONNECTION

Up to 60 sensor heads can be managed at once using just one PC.

Using TCP/IP (Ethernet) allows for greater freedom with long-range transmissions and branching using hubs, thus eliminating the need to worry about the layout of the system.



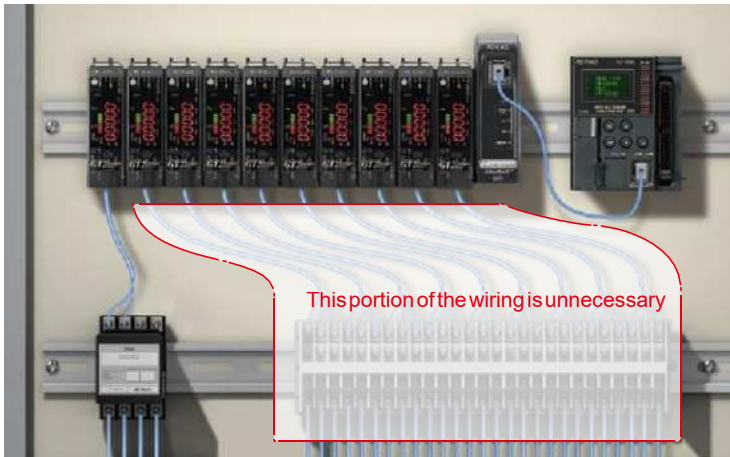
**PLC CONNECTION**

**SAVE WIRING TIME WITH OPEN FIELD NETWORK SUPPORT**

The DL Series of communication units includes a versatile lineup for communicating data with various equipment. Data communication offers not only setting bank switching at tooling changes but also supports a wider range of products through reading and writing of settings. Measurement data can also be communicated, making it possible to utilize constant data monitoring and product traceability management.

**REDUCED LABOR SPENT ON WIRING AND INSTALLATION**

Wiring work can be cumbersome. For example, importing five outputs (HH/High/Go/Low/LL) to a PLC from 10 amplifiers with main units paired with expansion units requires 52 individual wires (including power supply lines). Using the DL Series for communication, wiring can be completed with just three wires: main unit power supply wiring and the communication cable.



- Reduce cable fabrication work
- Reduce time wiring into terminal blocks
- No terminal blocks required

CONVENTIONAL METHOD



With conventional models, the required wiring was directly related to the number of outputs, resulting in a large number of wires and making it difficult to ensure sufficient space for the terminal block.

DL Series



Using the DL Series, judgment results and measurement data can be handled via just one line. This allows not only for reduced time spent on wiring but also the ability to utilize data.

**PLC CONNECTION**

**REDUCE COSTS WITH MULTI-FUNCTION AMPLIFIER UNITS**

**Batch read and change settings for multiple amplifier units**

Batch transmit data for a maximum of 15 units. Settings can also be changed from a PC or PLC which leads to reduced setup time.



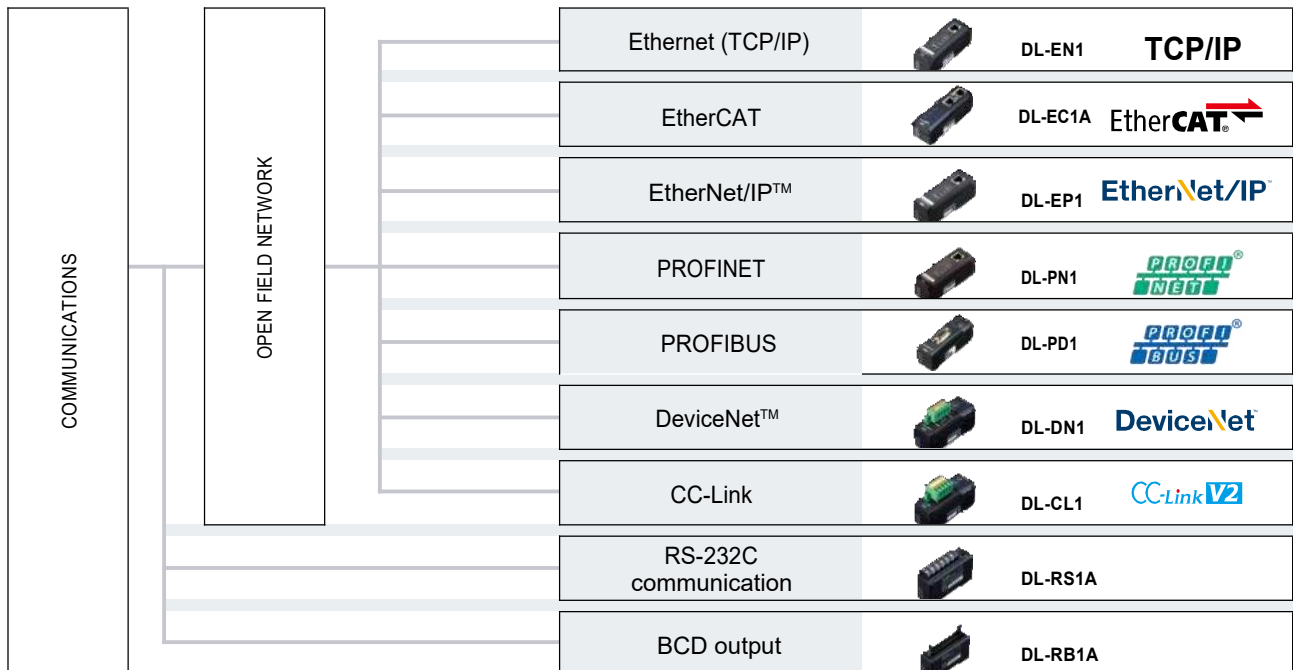
**Further wiring and space savings with the multi-sensor unit**

Up to 5 sensor heads can be connected to 1 multi-sensor amplifier unit. Up to 3 units can be linked, which allows for a maximum of 15 connected sensor heads.



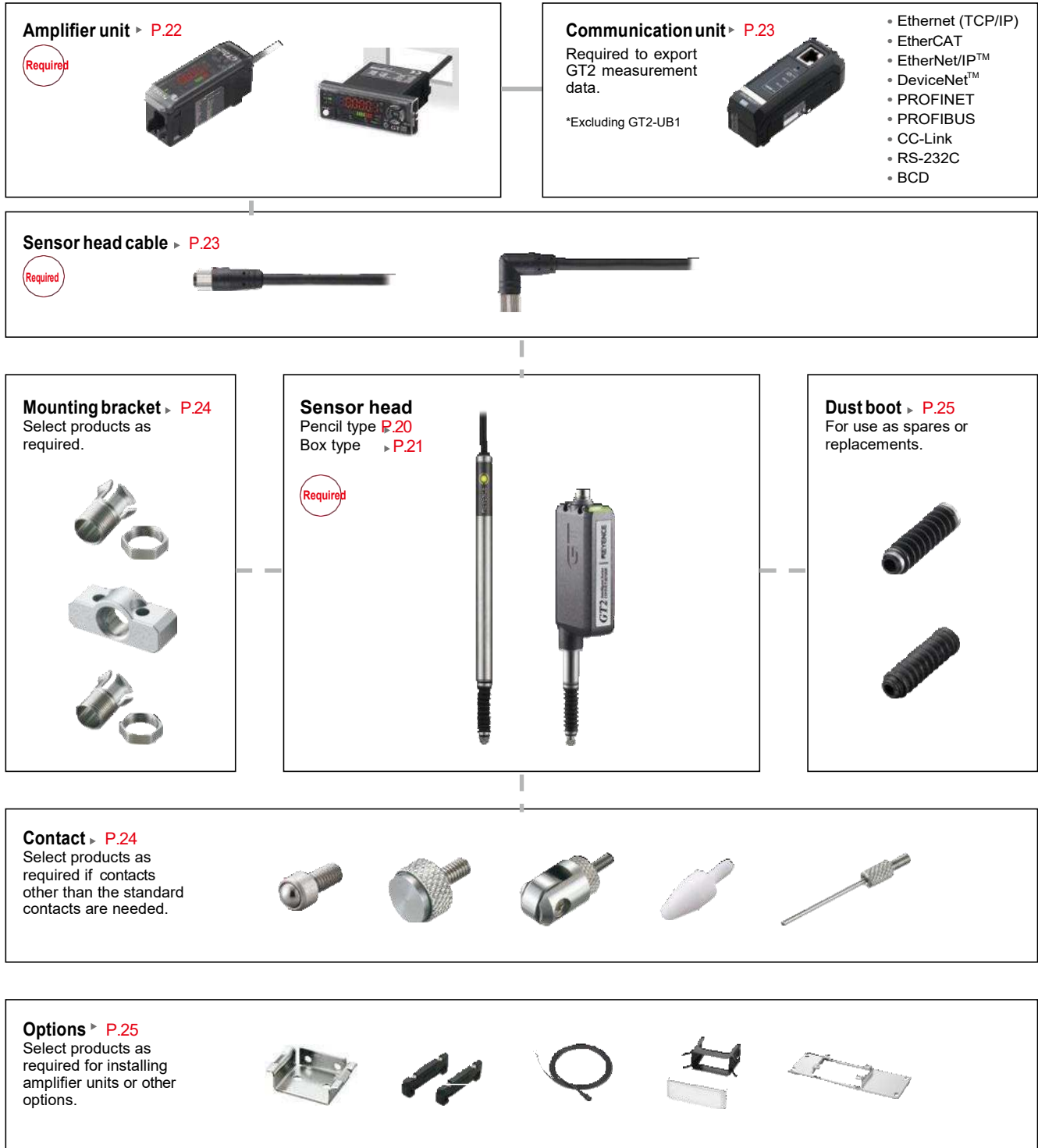
**DL Series lineup**

The GT2 Series supports various networks with its lineup of communication units.



# SYSTEM CONFIGURATION

The GT2 Series has a comprehensive lineup, allowing users to select those products that best suit their working environment.

















**SENSOR HEAD LINEUP**

Select the sensor head by measuring range, appearance, resolution, accuracy, mounting method, and measuring force


















**Short-range pencil type**

Measuring range	Model		Standard	Measuring range	Model		Standard
	Accuracy				Accuracy		
1 mm 0.04"	Resolution 0.1 μm Accuracy 1 μm (Any 0.1 mm 0.004" range of measurement center ±0.15 mm ±0.006")			5 mm 0.20"	Resolution 0.1 μm Accuracy 1 μm (Any 0.2 mm 0.008" range of measurement center ±0.3 mm ±0.012")		

**Pencil type**




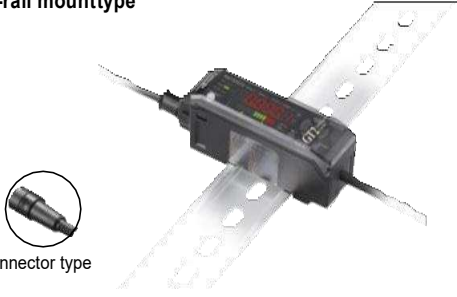







Measuring range	Model		Standard		Flange	Air push	
	Accuracy		Standard	Low stress	Standard	Standard	Low stress
12 mm 0.47"	<b>High-accuracy</b>  Resolution 0.1 μm Accuracy 1 μm		<b>GT2-P12K</b>  	<b>GT2-P12KL</b>  	<b>GT2-P12KF</b>  	<b>GT2-PA12K</b>  	<b>GT2-PA12KL</b>  
			<b>GT2-P12</b>  	<b>GT2-P12L</b>  	<b>GT2-P12F</b>  	<b>GT2-PA12</b>  	<b>GT2-PA12L</b>  
	<b>General-purpose</b>  Resolution 0.5 μm Accuracy 2 μm						

**Box type**

Measuring range	Model Accuracy	Standard		Flange		Air push	
		Standard	Low stress	Standard	Low stress	Standard	Low stress
12 mm 0.47"	<b>High-accuracy</b> Resolution 0.1 μm Accuracy 1 μm	<b>GT2-H12K</b> 	<b>GT2-H12KL</b> 	<b>GT2-H12KF</b> 	<b>GT2-H12KLF</b> 	<b>GT2-A12K</b> 	<b>GT2-A12KL</b> 
	<b>General-purpose</b> Resolution 0.5 μm Accuracy 2 μm	<b>GT2-H12</b> 	<b>GT2-H12L</b> 	<b>GT2-H12F</b> 	<b>GT2-H12LF</b> 	<b>GT2-A12</b> 	<b>GT2-A12L</b> 
32 mm 1.26"	<b>General-purpose</b> Resolution 0.5 μm Accuracy 3 μm	<b>GT2-H32</b> 	<b>GT2-H32L</b> 	-	-	<b>GT2-A32</b> 	-
50 mm 1.97"	<b>General-purpose</b> Resolution 0.5 μm Accuracy 3.5 μm	<b>GT2-H50</b> 	-	-	-	<b>GT2-A50</b> 	-

# AMPLIFIER UNIT LINEUP

Select according to the output method, mounting method, and number of connected units

Amplifier unit type	Appearance/model																								
Judgment output (5 outputs)	<p><b>DIN-rail mount type</b></p>  <p><b>Panel mount type</b></p>  <p>Connector type</p> 	<p><b>5-output function</b> Judges the 5 statuses HH/High/Go/Low/LL</p> <p><b>Bank function</b> Registers limit setting values and preset values in up to 4 different groups</p> <p><b>Calculation functions using expansion units</b> Enables calculations such as maximum value, minimum value, and degree of flatness</p> <table border="1" data-bbox="959 449 1451 632"> <tr> <td></td> <td></td> <td>Loose wire</td> <td>Connector</td> <td>Panel</td> </tr> <tr> <td rowspan="2">Main unit</td> <td>NPN</td> <td><b>GT2-71N</b></td> <td><b>GT2-71CN</b></td> <td><b>GT2-75N</b></td> </tr> <tr> <td>PNP</td> <td><b>GT2-71P</b></td> <td><b>GT2-71CP</b></td> <td><b>GT2-75P</b></td> </tr> <tr> <td rowspan="2">Expansion unit</td> <td>NPN</td> <td><b>GT2-72N</b></td> <td><b>GT2-72CN</b></td> <td><b>GT2-76N</b></td> </tr> <tr> <td>PNP</td> <td><b>GT2-72P</b></td> <td><b>GT2-72CP</b></td> <td><b>GT2-76P</b></td> </tr> </table>			Loose wire	Connector	Panel	Main unit	NPN	<b>GT2-71N</b>	<b>GT2-71CN</b>	<b>GT2-75N</b>	PNP	<b>GT2-71P</b>	<b>GT2-71CP</b>	<b>GT2-75P</b>	Expansion unit	NPN	<b>GT2-72N</b>	<b>GT2-72CN</b>	<b>GT2-76N</b>	PNP	<b>GT2-72P</b>	<b>GT2-72CP</b>	<b>GT2-76P</b>
		Loose wire	Connector	Panel																					
Main unit	NPN	<b>GT2-71N</b>	<b>GT2-71CN</b>	<b>GT2-75N</b>																					
	PNP	<b>GT2-71P</b>	<b>GT2-71CP</b>	<b>GT2-75P</b>																					
Expansion unit	NPN	<b>GT2-72N</b>	<b>GT2-72CN</b>	<b>GT2-76N</b>																					
	PNP	<b>GT2-72P</b>	<b>GT2-72CP</b>	<b>GT2-76P</b>																					
Analog output (4 to 20 mA)	<p><b>DIN-rail mount type</b></p>  <p>Connector type</p> 	<p><b>3-output function</b> Judges the 3 statuses High/Go/Low</p> <p><b>Bank function</b> Registers limit setting values and preset values in up to 4 different groups</p> <p><b>Calculation functions using expansion units</b> Enables calculations such as maximum value, minimum value, and degree of flatness</p> <table border="1" data-bbox="959 869 1451 961"> <tr> <td></td> <td></td> <td>Connector</td> </tr> <tr> <td rowspan="2">Main unit</td> <td>NPN</td> <td><b>GT2-71MCN</b></td> </tr> <tr> <td>PNP</td> <td><b>GT2-71MCP</b></td> </tr> </table>			Connector	Main unit	NPN	<b>GT2-71MCN</b>	PNP	<b>GT2-71MCP</b>															
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	PNP	<b>GT2-71MCP</b>																							
Pulse output	<p><b>DIN-rail mount type</b></p>  <p>Increment/decrement direction Pulse output resolution Minimum phase difference</p>	<p><b>Minimum phase difference selection</b> [0.5/2.5/5/25 μs] Capable of batch output of position information.</p> <table border="1" data-bbox="959 1100 1451 1163"> <tr> <td></td> <td>Loose wire</td> </tr> <tr> <td>Main unit</td> <td><b>GT2-71D</b></td> </tr> </table>		Loose wire	Main unit	<b>GT2-71D</b>																			
	Loose wire																								
Main unit	<b>GT2-71D</b>																								
Large display	<p><b>Panel mount type</b></p>  	<p>Easy operation with a large display and buttons. Up to 11 sensor heads can be connected using the expansion board. * With only the main body, up to 2 sensor heads can be connected</p> <table border="1" data-bbox="959 1297 1451 1444"> <tr> <td></td> <td></td> <td>Connector</td> </tr> <tr> <td rowspan="2">Main body</td> <td>NPN</td> <td><b>GT2-100N</b></td> </tr> <tr> <td>PNP</td> <td><b>GT2-100P</b></td> </tr> <tr> <td rowspan="2">Expansion board (3 sensor heads/1 board)</td> <td>NPN</td> <td><b>GT2-E3N</b></td> </tr> <tr> <td>PNP</td> <td><b>GT2-E3P</b></td> </tr> </table>			Connector	Main body	NPN	<b>GT2-100N</b>	PNP	<b>GT2-100P</b>	Expansion board (3 sensor heads/1 board)	NPN	<b>GT2-E3N</b>	PNP	<b>GT2-E3P</b>										
		Connector																							
Main body	NPN	<b>GT2-100N</b>																							
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Expansion board (3 sensor heads/1 board)	NPN	<b>GT2-E3N</b>																							
	PNP	<b>GT2-E3P</b>																							
Multi-sensor amplifier unit	<p><b>DIN-rail mount type</b></p> 	<p>Up to 5 sensor heads can be connected to 1 amplifier unit Up to 15 sensor heads can be connected by adding 2 expansion units * A communication unit (DL Series) is required for output.</p> <table border="1" data-bbox="959 1625 1451 1724"> <tr> <td></td> <td>Multi-head connection</td> </tr> <tr> <td>Main unit</td> <td><b>GT2-500</b></td> </tr> <tr> <td>Expansion unit</td> <td><b>GT2-550</b></td> </tr> </table>		Multi-head connection	Main unit	<b>GT2-500</b>	Expansion unit	<b>GT2-550</b>																	
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Main unit	<b>GT2-500</b>																								
Expansion unit	<b>GT2-550</b>																								
USB connection	<p><b>USB connection type</b></p>  	<p>Connects directly to the USB port of a PC. An inspection system can be constructed easily by using an I/O unit together with this amplifier.</p> <table border="1" data-bbox="959 1919 1451 2011"> <tr> <td></td> <td>USB connection</td> </tr> <tr> <td>connection unit</td> <td><b>GT2-UB1</b></td> </tr> <tr> <td>I/O unit</td> <td><b>DL-NS1</b></td> </tr> </table>		USB connection	connection unit	<b>GT2-UB1</b>	I/O unit	<b>DL-NS1</b>																	
	USB connection																								
connection unit	<b>GT2-UB1</b>																								
I/O unit	<b>DL-NS1</b>																								

**Sensor head cable** Select by the distance between the sensor head and the amplifier unit, the environment, and the mounting method. (Cannot be used with GT2-UB1)

Oil-resistant cable (straight)*1		Standard cable (straight)		Standard cable (L-shaped)*2	
GT2-CHP2M	2 m 6.6'	GT2-CH2M	2 m 6.6'	GT2-CHL2M	2 m 6.6'
GT2-CHP5M	5 m 16.4'	GT2-CH5M	5 m 16.4'	GT2-CHL5M	5 m 16.4'
GT2-CHP10M	10 m 32.8'	GT2-CH10M	10 m 32.8'	GT2-CHL10M	10 m 32.8'
-		GT2-CH20M	20 m 65.6'	GT2-CHL20M	20 m 65.6'

**Sensor head relay cable** Select by distance between the sensor head and the amplifier unit. (For GT2-UB1)










Oil-resistant cable (straight)*1		Standard cable (straight)		Standard cable (L-shaped)*2	
OP-88060	2 m 6.6'	OP-87716	0.5 m 1.6'	OP-88061	2 m 6.6'
-		OP-87431	3.5 m 11.5'	-	
-		OP-87432	7.5 m 24.6'	-	
-		OP-87433	9 m 29.5'	-	

\*1 To satisfy IP67G/NEMA Type 13 with the GT2-P12K(F)/P12(F) and IP67G with the GT2-S1/S5, the oil-resistant cable must be used. \*2 Can only be used with the 12 mm 0.47", 5 mm 0.20", and 1 mm 0.04" models.

Communication method	Model	Appearance	Judgment result readout	Measurement value readout	Control input	Modify tolerance value	Remarks
Ethernet (TCP/IP)	DL-EN1		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Uses TCP/IP communication. Communicate by creating a communication program.
EtherCAT	DL-EC1A		<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Uses cyclic communication. A communication program does not need to be created. Change settings using mail box communication.
EtherNet/IP™	DL-EP1		<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Uses cyclic communication. A communication program does not need to be created. Change settings using explicit message communication.
PROFINET	DL-PN1		<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Uses data I/O communication. A communication program does not need to be created. Change settings using record data communication.
PROFIBUS	DL-PD1		<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Uses cyclic transmissions. A communication program does not need to be created. Change settings using the DP-V1 service.
DeviceNet™	DL-DN1		<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Uses I/O communication. A communication program does not need to be created. Change settings using explicit message communication.
CC-Link	DL-CL1		<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Uses cyclic transmissions. A communication program does not need to be created. Change settings using handshake control.
RS-232C	DL-RS1A		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Uses RS-232C communication. Communicate by creating a communication program.
BCD	DL-RB1A		<input checked="" type="checkbox"/>	<input type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Measurement values are synchronized and updated with the input terminal or automatically updated by timer. Values are synchronized and read by strobe output.

The  symbol indicates wire savings and communication program creation is not required. =Can be accessed by creating a communication program. =Cannot be accessed.

Mounting brackets

 <p>GENERAL PURPOSE TYPE Mounting bracket A / For 1 mm 0.04"/5 mm 0.20"/12 mm 0.47" type <b>OP-76874</b></p>	 <p>SIDE MOUNTING TYPE Mounting bracket B / For 1 mm 0.04"/5 mm 0.20"/12 mm 0.47" type <b>OP-76875</b></p>	 <p>Drill a <math>\phi 10</math> <math>\phi 0.39</math>" hole, and secure the mounting bracket. For mounting bracket D, drill a <math>\phi 14</math> <math>\phi 0.55</math>" hole, and secure the mounting bracket.</p> <p>* The mounting method is the same for mounting bracket A and mounting bracket C. * When using the GT2-H32L with the contact probe pointed up, use the mounting holes on the main body.</p>
 <p>REINFORCED HOLDING FORCE TYPE Mounting bracket C / For 1 mm 0.04"/5 mm 0.20"/12 mm 0.47" type <b>OP-84396</b> Vibration resistant</p>	 <p>SIDE MOUNTING TYPE Mounting bracket E / For 1 mm 0.04"/5 mm 0.20"/12 mm 0.47" type <b>OP-87220</b> Reinforced holding force</p>	
 <p>COUPLED MOUNTING TYPE Mounting bracket F / For 1 mm 0.04"/5 mm 0.20"/12 mm 0.47" type <b>OP-87863</b></p>	 <p>PROBE PUSH PROTECTION TYPE Mounting bracket I / For 1 mm 0.04" type <b>OP-88157</b></p>	 <p>The sensor head mounting pitch is 10 mm 0.39" when the brackets are mounted to the same surface and 9 mm 0.35" when the brackets are mounted front and back.</p>
 <p>PROBE PUSH PROTECTION TYPE Mounting bracket P / For 5 mm 0.20"/12 mm 0.47" type <b>OP-88158</b></p>	 <p>PROBE SIDE PROTECTION TYPE Mounting bracket R / For 5 mm 0.20"/12 mm 0.47" type <b>OP-88159</b></p>	 <p>REINFORCED HOLDING FORCE TYPE Mounting bracket D / For 32 mm 1.26"/50 mm 1.97" type <b>OP-84327</b> Vibration resistant</p>

Contacts

 <p>STANDARD<sup>*1</sup> <b>OP-77678</b> For standard measurements</p>	 <p>SUPER-TOUGH<sup>*2</sup> <b>OP-77682</b> Uses a super-tough alloy, for high-accuracy measurements</p>	 <p>STANDARD (small)<sup>*3</sup> <b>OP-87984</b> For standard measurements</p>	 <p>SUPER-TOUGH (small)<sup>*4</sup> <b>OP-87985</b> Uses a super-tough alloy, for high-accuracy measurements</p>	 <p>FLAT PLATE <b>OP-77679</b> For objects with a curved or pointed surface</p>	 <p>ROLLER <b>OP-77680</b> For moving objects</p>
 <p>FLUOROCARBON RESIN <b>OP-80228</b> Made from material that is unlikely to damage the target's surface</p>	 <p>CERAMIC <b>OP-81970</b> To electrically insulate the sensor from the target</p>	 <p>NEEDLE <b>OP-77681</b> To measure in tight locations</p>	 <p>OFFSET <b>OP-77683</b> For multiple measurements of a small object</p>	 <p>SPACER <b>OP-77684</b> Extends the spindle 12.2mm 0.48"</p>	 <p>ROLLER (HIGH-ACCURACY) <b>OP-93332</b> For use when the roller eccentricity is a concern</p>

\*1 Standard on the GT2-P(A)12(L/F), GT2-H(A)12(L/F/LF), GT2-H(A)32(L), GT2-H(A)50  
\*2 Standard on the GT2-P(A)12K(L/F), GT2-H(A)12K(L/F/LF), GT2-S1, GT2-S5  
\*3 Standard on the GT2-PA12  
\*4 Standard on the GT2-PA12K








## Dust boots/Dust seal

 <p>STANDARD DUST BOOT<sup>*1</sup> (material: NBR) <b>OP-88063</b> For GT2-S1</p>	 <p>STANDARD DUST BOOT<sup>*2</sup> (material: NBR) <b>OP-88065</b> For GT2-S5</p>	 <p>STANDARD DUST BOOT (material: NBR) For 12 mm <b>0.47" OP-84332</b><sup>*3</sup> For 32 mm <b>1.26" OP-84459</b><sup>*4</sup> For 50 mm <b>1.97" OP-84460</b><sup>*5</sup> Cannot be used with the GT2-PA12K/PA12.</p>	 <p>FLUOROCARBON RUBBER DUST BOOT (material: FKM) For 12 mm <b>0.47" OP-87859</b> Cannot be used with the GT2-PA12K/PA12.</p>	 <p>REPLACEMENT DUST SEAL (material: SUS303) <b>OP-87932</b> Dedicated for use with the GT2-PA12K/PA12.</p>
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<sup>\*1</sup> Standard on the GT2-S1 <sup>\*2</sup> Standard on the GT2-S5 <sup>\*3</sup> Standard on GT2-P12(K/F), GT2-H12(K/F), GT2-A12(K/F) <sup>\*4</sup> Standard on GT2-H(A)32 <sup>\*5</sup> Standard on GT2-H(A)50








## Amplifier unit options (for DIN-rail mount/panel mount types)

 <p>DIN-RAIL TYPE AMPLIFIER UNIT BRACKET <b>OP-76877</b></p>	 <p>END UNIT (2 count) <b>OP-26751</b></p>	 <p>SOCKET CABLE <b>GT2-CA2M/CA10M</b> Required with the connector type</p>	 <p>PANEL MOUNT <b>OP-84394</b> Included with the panel type</p>	 <p>EXPANSION CABLE 300 mm <b>11.81"</b> <b>OP-35361</b> To connect panel types horizontally, and to connect the panel type and the DL</p>
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## Amplifier unit options (for the GT2-100N/100P)

 <p>EXPANSION BOARD <b>GT2-E3N/E3P</b> Can expand 3 sensor heads per 1 board</p>	 <p>BRACKET <b>OP-84331</b> To mount on a rack</p>	 <p>20-PIN MIL CONNECTOR <b>OP-22185</b> For 1 to 2 sensor heads</p>	 <p>30-PIN MIL CONNECTOR <b>OP-84456</b> For the expansion board</p>
 <p>CONTACTS for AWG24 to 22, 200 count <b>OP-22186</b> For OP-22185/84456</p>	 <p>CONTACTS for AWG28 to 26, 200 count <b>OP-30594</b> For OP-22185/84456</p>	 <p>SPECIAL CRIMPING TOOL <b>OP-21734</b> For crimping OP-22186/30594</p>	 <p>EXPANSION CABLE 300 mm <b>11.81"</b> <b>OP-35361</b> Use when connecting the DL</p>

## Others

 <p>IO UNIT CABLE For DL-NS1 <b>OP-87564/OP-87565/OP-87566</b></p>	 <p>SPEED CONTROLLER (LOW STRESS) <b>OP-88062</b> For adjusting the air for GT2-PA12KL/PA12L</p>	 <p>LIFT LEVER <b>OP-84397</b> Manually lifts the spindle</p>	 <p>SHORT-RANGE TYPE MOUNTING ADAPTER <b>OP-88117</b> For GT2-S1/S5</p>
 <p>COILING TUBE <b>OP-87986</b> For air push type</p>	 <p>2-ø4 ø0.16"</p> <p>SPEED CONTROLLER <b>OP-87970</b> For adjusting the air for air push type Cannot be used with the GT2-PA12KL/PA12L</p>	 <p>CONNECTORS Replacements for connecting to the amplifier unit <b>OP-84338 (2 count)</b> For the sensor head cable</p>	

AUTOMOBILES



Inner and outer diameter measurement of components



Door beam deformation check



Disc assembly inspection



Camshaft runout measurement



Flatness measurement of engine block



Oil pan flatness measurement

METALS



Bearing assembly inspection



Mill roll gap management



Dimensional measurement during machining

EQUIPMENT



Machine tool stroke management



Assembly equipment press fitting inspection



Product chucking confirmation inspection

ELECTRONICS



Battery flatness check



Smartphone chassis flatness inspection



Board assembly check



Hard disk frame assembly inspection



Hard disk clamp parallelism inspection

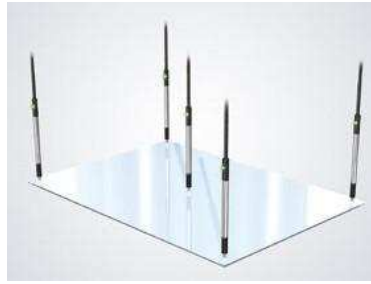


Chassis frame warpage inspection

SEMICONDUCTORS/LIQUID CRYSTALS



Polisher height control



Liquid crystal panel flatness inspection



Wafer thickness measurement

FOOD/PRINTING



Double label stickers detection





Workpiece suction check



Double feed detection

# SPECIFICATIONS

## Pencil type (short-range)

Model	GT2-S1	GT2-S5	
Appearance			
Detection system	Differential transformer		
Measuring range <sup>1</sup>	1 mm <b>0.04</b> *	5 mm <b>0.20</b> *	
Operating range <sup>1</sup>	2 mm <b>0.08</b> *	7 mm <b>0.28</b> *	
Resolution	0.1 μm		
Indicated accuracy <sup>2-4</sup>	1 μm (P-P)		
Measuring force <sup>3</sup>	Downward mounting	1.12 N	1.0 N
	Side mounting	1.1 N	0.95 N
	Upward mounting	1.08 N	0.9 N
Sampling cycle	1 ms		
Mechanical response <sup>4</sup>	40 Hz	20 Hz	
Operation indicator light	2-color LED (red, green)		
Environmental resistance	Enclosure rating		IP67G(JIS) <sup>5</sup> IP67(IEC)
	Ambient temperature		-10 to +55°C <b>14 to 131°F</b> (No freezing)
	Relative humidity		10 to 85% RH (No condensation)
	Vibration		10 to 55 Hz Double amplitude 1.5 mm <b>0.06</b> * in the X, Y, Z axis directions respectively, 2 hours
	Impact resistance		1000 m/s <sup>2</sup> (IEC60068-2-27)
Materials	Main body		Main body case: SUS440C (GT2-S1)/SUS430F (GT2-S5), Sensor head-relay connector cable: PUR, Relay amplifier: PPSU
	Dust boot		NBR
	Contact <sup>6</sup>		SUS304, cemented tungsten carbide
Sensor head cable	Optional (connect to relay connector)		
Weight (not including cable) <sup>7</sup>	Approx. 30 g	Approx. 40 g	

\*1 The measuring range represents the range at which measured values can be displayed. The operating range is the actual movable range of the spindle.

\*2 GT2-S1: Within ±0.15 mm **0.006**\* from the center of the measuring range, the width for any 0.1 mm **0.004**\* is 1 μm. The entire area is 2 μm. GT2-S5: Within ±0.3 mm **0.012**\* from the center of the measuring range, the width for any 0.2 mm **0.008**\* is 1 μm. The entire area is 2 μm. The linearity for the entire measuring range is ±0.15% of F.S. (F.S. for GT2-S1: 1 mm **0.04**\*, GT2-S5: 5 mm **0.20**\*)

\*3 Representative value at the center of the measuring range. Please note that the measuring force varies depending on the installation orientation of the dust boot.

\*4 Value when the ambient temperature is 20°C **68°F**.







\*5 When an M8 oil-resistant cable (GT2-CHP2M/CHP5M/CHP10M) is used for the sensor head cable.

\*6 Contacts are available as options sold separately.

\*7 Including the relay connector.

Note: You may not be able to connect the sensor head to the amplifier unit depending on when the amplifier unit was purchased. For details, contact your local sales office.

## Pencil type

Model	GT2-P12K	GT2-P12KF	GT2-P12KL	GT2-P12	GT2-P12F	GT2-P12L	
Appearance							
Detection system	Scale Shot System II, absolute (no tracking errors) type						
Measuring range	12 mm <b>0.47</b> *						
Resolution	0.1 μm			0.5 μm			
Indicated accuracy <sup>1</sup>	1 μm (P-P)			2 μm (P-P)			
Measuring force <sup>2</sup>	Downward mounting	1.0 N	0.2 N	1.0 N	0.95 N	0.2 N	
	Side mounting	0.95 N	0.15 N	0.95 N	0.95 N	0.15 N	
	Upward mounting	0.9 N	0.1 N	0.9 N	0.9 N	0.1 N	
Sampling cycle	4 ms						
Mechanical response <sup>1</sup>	10 Hz	4 Hz	10 Hz	10 Hz	4 Hz	4 Hz	
Operation indicator light	2-color LED (red, green)						
Environmental resistance	Enclosure rating		IP67G (JIS) <sup>3</sup> IP67 (IEC) NEMA Type 13 <sup>3</sup>	-	IP67G (JIS) <sup>3</sup> IP67 (IEC) NEMA Type 13 <sup>3</sup>		-
	Ambient temperature		-10 to +55°C <b>14 to 131°F</b> (No freezing)				
	Relative humidity		35 to 85% RH (No condensation)				
	Vibration		10 to 55 Hz Double amplitude 1.5 mm <b>0.06</b> * in the X, Y, Z axis directions respectively, 2 hours				
	Impact resistance		1000 m/s <sup>2</sup> (IEC60068-2-27)				
Materials	Main body						Main body case: SUS303, Status indicator: PET, Sensor head-relay connector cable: PUR, Relay connector: PBT
	Dust boot		NBR	-	NBR	-	-
	Contact <sup>4</sup>		SUS304, cemented tungsten carbide		SUS304, SUS440C		-
Sensor head cable	Optional (connect to relay connector)						
Weight (not including cable) <sup>5</sup>	Approx. 35 g	Approx. 45 g	Approx. 35 g	Approx. 35 g	Approx. 45 g	Approx. 35 g	

\*1 Value when the ambient temperature is 20°C **68°F**. Entire measuring range.

\*2 Representative value at the center of the measuring range. Please note that the measuring force varies depending on whether a dust boot is installed. In addition, add 0.4 N to the above values for the measuring force when using OP-87859.





\*3 When an M8 oil-resistant cable (GT2-CHP2M/CHP5M/CHP10M) is used for the sensor head cable.

\*4 Contacts are available as options sold separately.

\*5 Including the relay connector.

Note: You may not be able to connect the sensor head to the amplifier unit depending on when the amplifier unit was purchased. For details, contact your local sales office.

**Pencil type**

Model	GT2-PA12K	GT2-PA12KL	GT2-PA12	GT2-PA12L	
Appearance					
Detection system	Scale Shot System II, absolute (no tracking errors) type				
Measuring range	12 mm 0.47"				
Resolution	0.1 μm		0.5 μm		
Indicated accuracy <sup>1</sup>	1 μm (P-P)				
Measuring force <sup>2</sup>	Downward mounting	1.2 N	0.4 N	1.2 N	0.4 N
	Side mounting	1.15 N	0.35 N	1.15 N	0.35 N
	Upward mounting	1.1 N	0.3 N	1.1 N	0.3 N
Sampling cycle	4 ms				
Applied pressure range	0.24 MPa to 0.26 MPa	0.05 MPa to 0.07 MPa	0.24 MPa to 0.26 MPa	0.05 MPa to 0.07 MPa	
Pressure resistance	0.5 MPa				
Fluid used	Clean dry air				
Operation indicator light	2-color LED (red, green)				
Environmental resistance	Enclosure rating	IP67 (IEC)	-	IP67 (IEC)	-
	Ambient temperature	0 to +55°C 32 to 131°F (No freezing)			
	Relative humidity	35 to 85% RH (No condensation)			
	Vibration	10 to 55 Hz Double amplitude 1.5 mm 0.06" in the X, Y, Z axis directions respectively, 2 hours			
Impact resistance	1000 m/s <sup>2</sup> (IEC60068-2-27)				
Materials	Main body	Main body case: SUS 303, Status indicator: PET, Sensor head-relay connector cable: PUR, Relay connector: PBT, Spindle of GT2-PA12K/PA12: SUS430 (Fluorine coating)			
	Spindle	SUS430 (Fluorine coating) Dust seal: SUS303/SUS304/ Aluminum (Alumite processing)/ Special polyester fiber	SUS430/SUS440C	SUS430 (Fluorine coating) Dust seal: SUS303/SUS304/ Aluminum (Alumite processing)/ Special polyester fiber	SUS430/SUS440C
	Contact <sup>3</sup>	SUS304, cemented tungsten carbide		SUS304, SUS440C	
Sensor head cable	Optional (connect to relay connector)				
Weight (not including cable) <sup>4</sup>	Approx. 35 g				

<sup>1</sup> Value when the ambient temperature is 20°C 68°F. Entire measuring range.

<sup>2</sup> Representative values when using GT2-PA12K/GT2-PA12 with a pressure of 0.25 MPa. The measuring force varies depending on the air pressure used. For details, see table 1.  
Representative values when using GT2-PA12KL/GT2-PA12L with a pressure of 0.06 MPa. The measuring force varies depending on the air pressure used. For details, see table 2.

<sup>3</sup> Contacts are available as options sold separately.

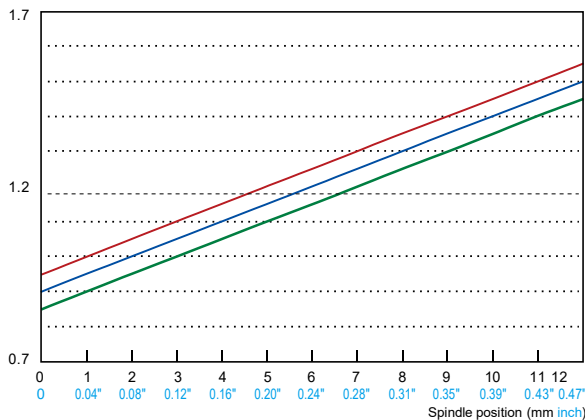
<sup>4</sup> Including the relay connector.

Note: You may not be able to connect the sensor head to the amplifier unit depending on when the amplifier unit was purchased. For details, contact your local sales office.

**GT2-PA12K/PA12**

Table 1. Relationship between spindle position and measuring force grouped according to used air pressure

Measuring force (N)



← Spindle extended

Spindle retracted →

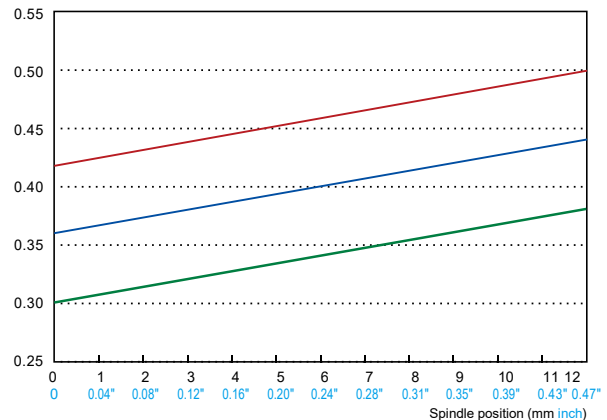
**Air pressure**

— 0.26 MPa — 0.25 MPa — 0.24 MPa

**GT2-PA12KL/PA12L**

Table 2. Relationship between spindle position and measuring force grouped according to used air pressure

Measuring force (N)



← Spindle extended

Spindle retracted →

**Air pressure**

— 0.07 MPa — 0.06 MPa — 0.05 MPa









\* The above graphs are for downward-mounted devices. When mounting sideways, the measuring force is -0.05 N. When mounting upwards, the measuring force is -0.1 N.

\* The above graphs are for downward-mounted devices. When mounting sideways, the measuring force is -0.05 N. When mounting upwards, the measuring force is -0.1 N.



SPECIFICATIONS

Box type




Model	GT2-H12K	GT2-H12KF	GT2-H12KL	GT2-H12KLF	GT2-H12	GT2-H12F	GT2-H12L	GT2-H12LF	
Appearance									
Detection system	Scale Shot System, absolute (no tracking errors) type								
Measuring range	12 mm 0.47"								
Resolution	0.1 μm				0.5 μm				
Indicated accuracy <sup>*1</sup>	1 μm (P-P)				2 μm (P-P)				
Measuring force <sup>*2</sup>	Downward mounting	1.0 N		0.4 N		1.0 N		0.4 N	
	Side mounting	0.9 N		0.3 N		0.9 N		0.3 N	
	Upward mounting	0.8 N		0.2 N		0.8 N		0.2 N	
Sampling cycle	1 ms								
Mechanical response <sup>*1</sup>	10 Hz		4 Hz		10 Hz		4 Hz		
Operation indicator light	2-color LED (red, green)								
Environmental resistance	Enclosure rating	IP67 (IEC)		-		IP67 (IEC)		-	
	Ambient temperature	-10 to +55°C 14 to 131°F (No freezing)							
	Relative humidity	35 to 85% RH (No condensation)							
	Vibration	10 to 55 Hz Double amplitude 1.5 mm 0.06" in the X, Y, Z axis directions respectively, 2 hours							
Impact resistance	1000 m/s <sup>2</sup> (IEC60068-2-27)								
Materials	Main body	Main body case: die-cast zinc, Indicator: polyarylate (PAR)							
	Dustboot	NBR		-		NBR		-	
	Contact <sup>*3</sup>	SUS304, cemented tungsten carbide				SUS304, SUS440C			
Sensor head cable	Optional (connect to the M8 connector)								
Weight (not including cable)	Approx. 95 g	Approx. 100 g	Approx. 95 g	Approx. 100 g	Approx. 95 g	Approx. 100 g	Approx. 95 g	Approx. 100 g	

\*1 Value when the ambient temperature is 20°C 68°F. Entire measuring range.

\*2 Representative value at the center of the measuring range. Please note that the measuring force varies by the installation state of the dust boot.

\*3 Contacts are available as options sold separately.

Box type (long range type)





Model	GT2-H32	GT2-H32L	GT2-H50	
Appearance				
Detection system	Scale Shot System, absolute (no tracking errors) type			
Measuring range	32 mm 1.26"		50 mm 1.97"	
Resolution	0.5 μm			
Indicated accuracy <sup>*1</sup>	3 μm (P-P)		3.5 μm (P-P)	
Measuring force <sup>*2</sup>	Downward mounting	2.1 N	1.2 N	
	Side mounting	1.8 N	0.9 N	
	Upward mounting	1.5 N	0.6 N	
Sampling cycle	1 ms			
Mechanical response <sup>*1</sup>	6 Hz	5 Hz	7 Hz	
Operation indicator light	2-color LED (red, green)			
Environmental resistance	Enclosure rating	IP67 (IEC)	IP67 (IEC)	
	Ambient temperature	-10 to +55°C 14 to 131°F (No freezing)		
	Relative humidity	35 to 85% RH (No condensation)		
	Vibration	10 to 55 Hz Double amplitude 1.5 mm 0.06" in the X, Y, Z axis directions respectively, 2 hours		
Impact resistance	1000 m/s <sup>2</sup> (IEC60068-2-27)			
Materials	Main body	Main body case: die-cast zinc, Indicator: polyarylate (PAR)		
	Dustboot	NBR	-	NBR
	Contact <sup>*3</sup>	SUS304, SUS440C		
Sensor head cable	Optional (connect to the M8 connector)			
Weight (not including cable)	Approx. 270 g		Approx. 320 g	

\*1 Value when the ambient temperature is 20°C 68°F. Entire measuring range.

\*2 Representative value at the center of the measuring range. Please note that the measuring force varies by the installation state of the dust boot.

\*3 Contacts are available as options sold separately.

### Box type (air push type)

Model	GT2-A12K	GT2-A12KL	GT2-A12	GT2-A12L	
Appearance					
Detection system	Scale Shot System, absolute (no tracking errors) type				
Measuring range	12 mm 0.47"				
Resolution	0.1 µm		0.5 µm		
Indicated accuracy <sup>1</sup>	1 µm (P-P)		2 µm (P-P)		
Measuring force <sup>2</sup>	Downward mounting	1.2 N	0.4 N	1.2 N	0.4 N
	Side mounting	1.1 N	0.3 N	1.1 N	0.3 N
	Upward mounting	1.0 N	0.2 N	1.0 N	0.2 N
Sampling cycle	1 ms				
Applied pressure range	0.25 MPa to 0.50 MPa				
Pressure resistance	1 MPa				
Fluid used	Dry air				
Operation indicator light	2-color LED (red, green)				
Environmental resistance	Enclosure rating	IP67 (IEC) <sup>3</sup>	-	IP67 (IEC) <sup>3</sup>	-
	Ambient temperature	0 to +55°C 32 to 131°F (No freezing)			
	Relative humidity	35 to 85% RH (No condensation)			
	Vibration	10 to 55 Hz Double amplitude 1.5 mm 0.06" in the X, Y, Z axis directions respectively, 2 hours			
Materials	Impact resistance	1000 m/s <sup>2</sup> (IEC60068-2-27)			
	Main body	Main body case: die-cast zinc, Cylinder section: aluminum alloy, Air joint resin: polyacetal, Air joint metal: nickel-plated brass, Indicator: polyarylate (PAR)			
	Dustboot	NBR	-	NBR	-
Contact <sup>4</sup>	SUS304, cemented tungsten carbide		SUS304, SUS440C		
Sensor head cable	Optional (connect to the M8 connector)				
Weight (not including cable)	Approx. 145 g				



<sup>1</sup> Value when the ambient temperature is 20°C 68°F. Entire measuring range.

<sup>2</sup> Representative value at the center of the measuring range. Please note that the measuring force varies by the installation state of the dust boot.

<sup>3</sup> Connect an exhaust joint to the air tube and ensure that foreign matter does not enter the tube from joint.

<sup>4</sup> Contacts are available as options sold separately.

### Box type (air push type/long range type)

Model	GT2-A32	GT2-A50	
Appearance			
Detection system	Scale Shot System, absolute (no tracking errors) type		
Measuring range	32 mm 1.26"	50 mm 1.97"	
Resolution	0.5 µm		
Indicated accuracy <sup>1</sup>	3 µm (P-P)	3.5 µm (P-P)	
Measuring force <sup>2</sup>	Downward mounting	2.1 N	3.2 N
	Side mounting	1.8 N	2.8 N
	Upward mounting	1.5 N	2.4 N
Sampling cycle	1 ms		
Applied pressure range	0.25 MPa to 0.50 MPa		
Pressure resistance	1 MPa		
Fluid used	Dry air		
Operation indicator light	2-color LED (red, green)		
Environmental resistance	Enclosure rating	IP67 (IEC) <sup>3</sup>	
	Ambient temperature	0 to +55°C 32 to 131°F (No freezing)	
	Relative humidity	35 to 85% RH (No condensation)	
	Vibration <sup>4</sup>	10 to 55 Hz Double amplitude 1.5 mm 0.06" in the X, Y, Z axis directions respectively, 2 hours	
Materials	Main body	Main body case: die-cast zinc, Cylinder section: aluminum alloy, Air joint resin: polyacetal, Air joint metal: nickel-plated brass, Indicator: polyarylate (PAR)	
	Dustboot	NBR	
	Contact <sup>5</sup>	SUS304, SUS440C	
Sensor head cable	Optional (connect to the M8 connector)		
Weight (not including cable)	Approx. 340 g	Approx. 405 g	

<sup>1</sup> Value when the ambient temperature is 20°C 68°F. Entire measuring range.

<sup>2</sup> Representative value at the center of the measuring range. Please note that the measuring force varies by the installation state of the dust boot.




<sup>3</sup> Connect an exhaust joint to the air tube and ensure that foreign matter does not enter the tube from joint.

<sup>4</sup> When using mounting bracket D (OP-84327), the double amplitude is 0.75 mm 0.03".

<sup>5</sup> Contacts are available as options sold separately.

SPECIFICATIONS

Judgment output/analog output type

Model	NPN output	Main unit	GT2-71(C)N	GT2-75N	GT2-71MCN
		Expansion unit *1	GT2-72(C)N	GT2-76N	-
	PNP output	Main unit	GT2-71(C)P	GT2-75P	GT2-71MCP
		Expansion unit *1	GT2-72(C)P	GT2-76P	-
Appearance					
Mounting type*2			DIN-rail mount	Panel mount	DIN-rail mount
Number of expansion units*1			Up to 14 expansion units for 1 main unit		
Power supply voltage*1			10 to 30 VDC, including 10% ripple (P-P), Class 2		20 to 30VDC, including 10% ripple (P-P), Class 2
Display range			-199.999.9 to 199.999.9		
Display resolution			0.1 μm		
Power consumption	Normal		2200 mW or less (73.3 mA or less at 30 V)		2700 mW or less (90.0 mA or less at 30 V)
	Power saving (Eco half)		1800 mW or less (60.0 mA or less at 30 V)		2300 mW or less (76.7 mA or less at 30 V)
	Power saving (Eco all)		1700 mW or less (56.7 mA or less at 30 V)		2200 mW or less (73.3 mA or less at 30 V)
Response time			hsp (3)/5/10/100/500/1000 ms (When using GT2-Pxxx, hsp (12)/20/40/400/2000/4000 ms)		
Control output (HH/HL/GO/LO/LL)*3	NPN output		NPN open collector, 40 V 50 mA or less, residual voltage 1 V or less*1		
	PNP output		PNP open collector, 30 V 50 mA or less, residual voltage 1 V or less*1		
Control input	Timing/preset/reset/bank input		No-voltage input		
Analog output	Output range		-		4 to 20 mA with a max. load resistance of 350 Ω
	Response time		-		Set response time + 1 ms
Environmental resistance	Ambient temperature		-10 to +50°C 14 to 122°F (No freezing)*1		
	Relative humidity		35 to 85% RH (No condensation)		
	Vibration		10 to 55 Hz Double amplitude 1.5 mm 0.06" in the X, Y, Z axis directions respectively, 2 hours		
Materials			Main body case/front cover: polycarbonate (PC), Key top: polyacetal (POM), Front sheet: polyethylene terephthalate (PET), Cable: polyvinyl chloride (PVC)		
Weight	GT2-71N(P)/72N(P)		Approx. 140 g (including power supply cable)		
	GT2-75N(P)/76N(P)		Approx. 140 g (including panel mount, front protective cover, power supply cable)		
	GT2-71MCN(P)/71CN(P)/72CN(P)		Approx. 70 g (not including the GT2-CA2M/CA5M/CA10M)		


\*1 When adding expansion units, there are the following restrictions according to the number of connected units.

- When 2 to 8 units are connected including the main unit
  - Power supply voltage: 20 to 30 VDC
  - Control output current: 20 mA or less
  - (GT2-71MCN(P) only) Ambient temperature: -10 to +45°C 14 to 113°F
- When 9 to 15 units are connected including the main unit
  - Power supply voltage: 20 to 30 VDC
  - Control output current: 10 mA or less (including the DL-RB1A output current)
  - Residual voltage: 1.5 V or lower
  - (GT2-71MCN(P) only) Ambient temperature: -10 to +45°C 14 to 113°F



\*2 When using the DIN-rail mount type, always mount it to a DIN-rail (mounted to a metal plate), and when adding expansion units, always use the end unit (OP-26751).

\*3 The GT2-71MCN(P) does not have HH/LL.

Pulse output type

Model	GT2-71D	
Appearance		
Mounting type	DIN-rail mount	
Number of expansion units	Only 1 unit	
Power supply voltage	10 to 30 VDC, including 10% ripple (P-P), Class 2	
Power consumption	1600 mW or less (53.3 mA or less at 30 V)	
Indicators	Power supply (green)/alarm (red) indicator, pulse output indicator (green), input indicator	
Pulse resolution	Select from 0.1/0.5/1/10 μm (when shipped: 0.5 μm)	
Minimum phase difference	Select from 0.5/2.5/5/25 μs (when shipped: 2.5 μs)	
Control input	Origin return	No-voltage input (contact, non-contact)
Output signal	90° phase difference, differential square wave (EIA-422 compliant) 4× multiplier	
Output signal level	+5 V	
Environmental resistance	Ambient temperature	-10 to +50°C 14 to 122°F (No freezing)
	Relative humidity	35 to 85% RH (No condensation)
	Vibration	10 to 55 Hz Double amplitude 1.5 mm 0.06" in the X, Y, Z axis directions respectively, 2 hours
Materials	Main body case/front cover: polycarbonate (PC), Cable: polyvinyl chloride (PVC)	
Weight	Approx. 110 g (including power supply cable)	

### Large display type

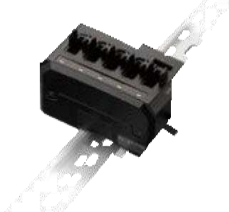
Model	NPN output	GT2-100N	GT2-E3N
	PNP output	GT2-100P	GT2-E3P
Appearance			
Mounting type	Panel mount		-
Number of connectable heads	2 heads with GT2-100N(P) alone + 3 heads per 1 head board expansion When expanded with a maximum of 3 head boards, 11 heads		-
Power supply voltage	10 to 30 VDC, including 10% ripple (P-P), Class 2		Supplied from the GT2-100N/100P
Display range	-199.999.9 to 199.999.9		-
Display resolution	0.1 μm		-
Power consumption	Normal	4500 mW or less (150.0 mA or less at 30 V)	4200 mW or less (140.0 mA or less at 30 V)
	Power saving (Eco half) *1	3700 mW or less (123.3 mA or less at 30 V)	4200 mW or less (140.0 mA or less at 30 V)
	Power saving (Eco all) *1	3600 mW or less (120.0 mA or less at 30 V)	4000 mW or less (133.3 mA or less at 30 V)
Response time	hsp (3)/5/10/100/500/1000 ms (When using GT2-Pxxx, hsp (12)/20/40/400/2000/4000 ms)		
Control output (HH/HL/GO/LO/LL)	NPN output	NPN open collector, 40 V 50 mA or less <sup>3</sup> , residual voltage 1 V or less	
	PNP output	PNP open collector, 30 V 50 mA or less <sup>3</sup> , residual voltage 1 V or less	
Control input	Timing/preset/ reset/bank input	No-voltage input	
Input/output connector *2		Power supply: Terminal block connection Input/output: 20-pin connector (MIL standard)	30-pin connector (MIL standard)
Environmental resistance	Ambient temperature	-10 to +50°C 14 to 122°F (No freezing)	
	Relative humidity	35 to 85% RH (No condensation)	
	Vibration	10 to 55 Hz Double amplitude 0.15 mm 0.01" in the X, Y, Z axis directions respectively, 2 hours	
Materials		Main body case/front cover: polycarbonate (PC), Key top: polyacetal (POM), Front sheet: polyethylene terephthalate (PET)	-
Weight		Approx. 380 g	Approx. 80 g

\*1 When the maximum number of sensor heads is connected, and all devices are set to power saving settings

\*2 The connector and cable are sold separately.

\*3 When 2 or more sensor heads are connected, 20 mA or less.

### Multi-head type


Model	Main unit	GT2-500	
	Expansion unit	GT2-550	
Appearance			
Mounting type *1	DIN-rail mount		
Number of expansion units *2	Maximum of 3 units including the main unit (Maximum of 15 sensor heads)		
Power supply voltage	20 to 30 VDC, including 10% ripple (P-P) (GT2-550 power supplied from the main unit), Class 2		
Consumption current	4800 mW 160.0 mA or less at 30 V		
Response time	hsp (3)/5/10/100/500/1000 ms (When using GT2-Pxxx, hsp (12)/20/40/400/2000/4000 ms)		
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 Double amplitude 1.5 mm 0.06" in the X, Y, Z axis directions respectively, 2 hours	
Materials	Main body case: polycarbonate, Cable: PVC		
Weight	GT2-500: Approx. 140 g, GT2-550: Approx. 95 g		

\*1 When connecting the DL Series and expansion units, always connect them when the amplifier unit is connected to the DIN-rail and use the end unit (OP-26751 included with the DL Series).

\*2 When using the DL-RB1A (for communication), ensure that the output current is 10 mA or less.

# SPECIFICATIONS

## USB connection unit

Model	<b>GT2-UB1</b>	
Appearance		
Cable connector	M8 Female	
USB connector	USB TypeA	
USB Communication	USB2.0 Full Speed	
Interface	USB-COM	
OS	Windows 8.1 Update/Proudate (32 bit/64 bit) Windows 7 Home Premium/Professional/Ultimate (SP1 or better, 32 bit/ 64 bit) Windows XP Home Edition/Professional (SP3 or better 32 bit) One OS must be installed.	
Power	USB bus power	
Current consumption	200 mA max.*1	
Environmental resistance	Ambient temperature	-10 to +50°C 14 to 122°F (No freezing)
	Ambient humidity	35 to 85%RH (No condensation)
	Vibration	10 to 55 Hz, Horizontal amplitude: 1.5 mm 0.06", 2 hours each in X, Y and Z axis
Material	Main unit: Polycarbonate (PC), Cable: PVC	
Weight	Approx. 40 g (including the cable)	


\*1 Bus-power-type USB hubs cannot be used.

## Software

Model	<b>GT2-H2</b>	
Interface	Over USB2.0 or RS-232C (Serial) port or Ethernet (TCP/IP)	
OS	Windows 8.1 Update/Proudate (32 bit/64 bit) Windows 7 Home Premium/Professional/Ultimate (SP1 or better, 32 bit/ 64 bit) Windows XP Home Edition/Professional (SP3 or better 32 bit) One OS must be installed.	
Languages	Japanese/English/German/Spanish/Portuguese/Italian/French/Simplified Chinese	
Processor	Windows 8.1/ Windows 7: Needs to be compliant with system requirements of OS. Windows XP: Pentium III or better Clock speed 1 GHz or faster	
Memory capacity	Windows 8.1/ Windows 7: Needs to be compliant with system requirements of OS. Windows XP: 1 GB or more	
Required capacity for installation	1 GB or more	
Monitor	Resolution 1024 × 768 pixel or higher, display color High Color (16 bit) or higher	
Operating conditions	.NET Framework 4.0 or 4.5 needs to be installed.*1	

\*1 If .NET Framework is not installed, .NET Framework 4.0 or 4.5 will be installed when GT2-H2 installed.

## USB connection I/O unit

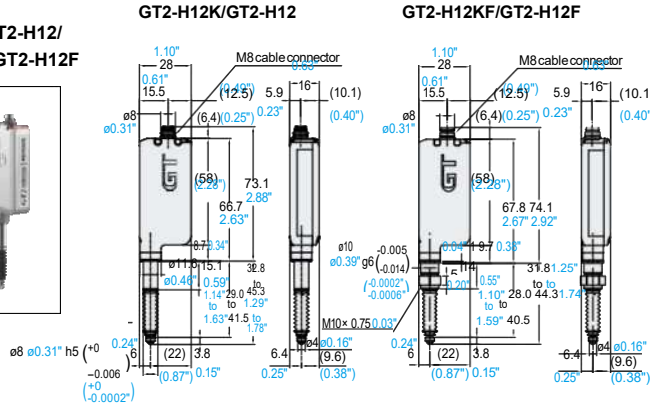
Model	<b>DL-NS1</b>	
Appearance		
Cable connector	M12 Male	
USB connector	USB TypeA	
USB Communication	USB2.0 Full Speed	
Interface	USB-COM	
OS	Windows 8.1 Update/Proudate (32 bit/64 bit) Windows 7 Home Premium/Professional/Ultimate (SP1 or better, 32 bit/64 bit) Windows XP Home Edition/Professional (SP3 or better 32 bit) One OS must be installed.	
Power	USB bus power	
Current consumption	100 mA max.	
Control input	Number of inputs	2
	Input type	Voltage input
	Maximum rating	26.4 V
	Minimum ON voltage	15 VDC
	Maximum OFF current	0.2 mA
Control output	Number of outputs	2
	Output type	Photo relay output
	Control output current	30 VDC 50 mA max. per output
	Maximum leak current	0.1 mA max.
	Maximum residual voltage	1 V max.
Switch input	Input type	No-voltage input
	Electrical Specification	Approx. 5 VDC/10 mA
Environmental resistance	Ambient temperature	-10 to +50°C 14 to 122°F (No freezing)
	Ambient humidity	35 to 85%RH (No condensation)
	Vibration	10 to 55 Hz, Horizontal amplitude: 1.5 mm 0.06", 2 hours each in X, Y and Z axis
Material	Main unit: Polycarbonate (PC), Cable: PVC	
Weight	Approx. 45 g (including the cable)	



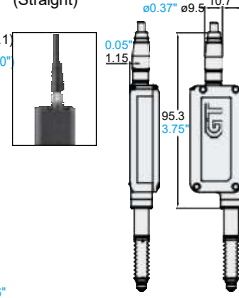


DIMENSIONS

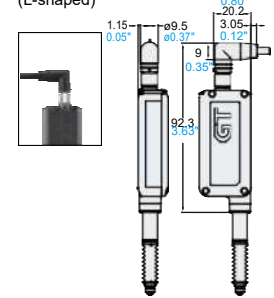
Sensor head  
(Standard)  
GT2-H12K/GT2-H12/  
GT2-H12KF/GT2-H12F



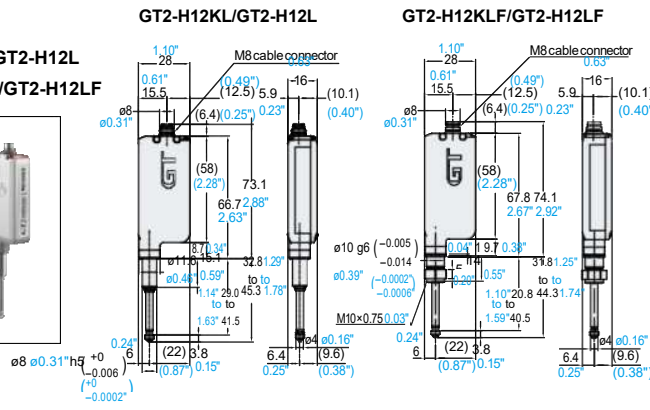
Cable connection  
(Straight)



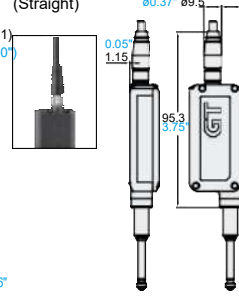
Cable connection  
(L-shaped)



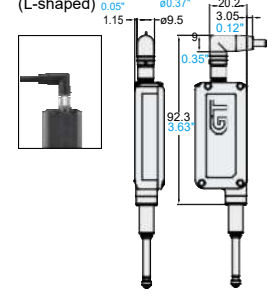
Sensor head  
(Low stress)  
GT2-H12KL/GT2-H12L/  
GT2-H12KLF/GT2-H12LF



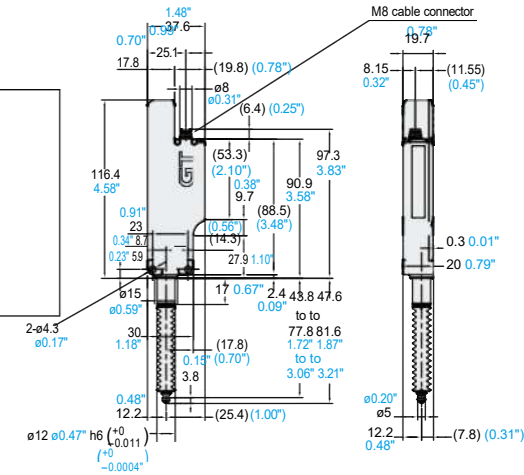
Cable connection  
(Straight)



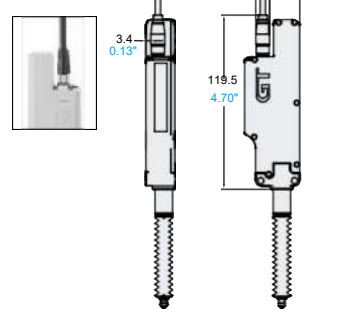
Cable connection  
(L-shaped)



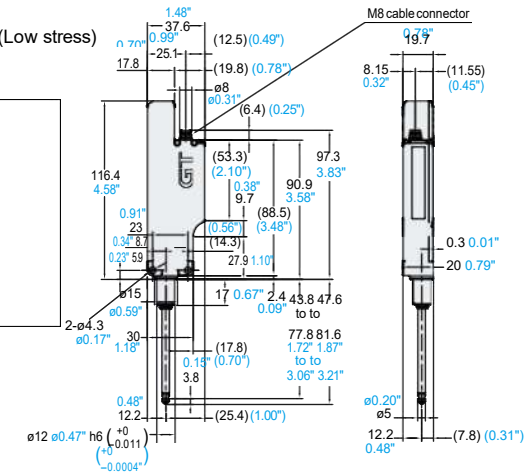
Sensor head  
(Standard)  
GT2-H32



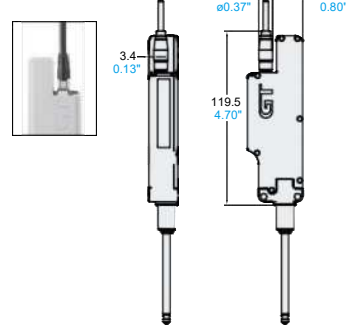
Cable connection  
(Straight)



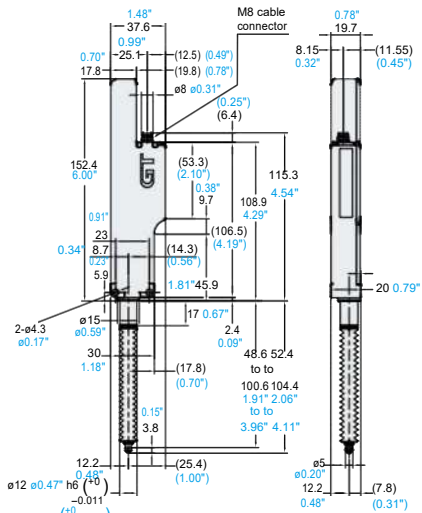
Sensor head (Low stress)  
GT2-H32L



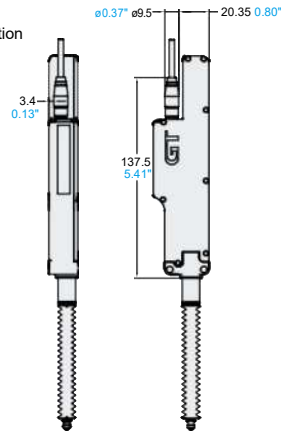
Cable connection  
(Straight)



Sensor head  
(Standard)  
**GT2-H50**



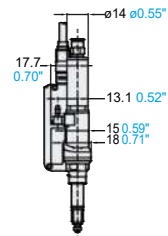
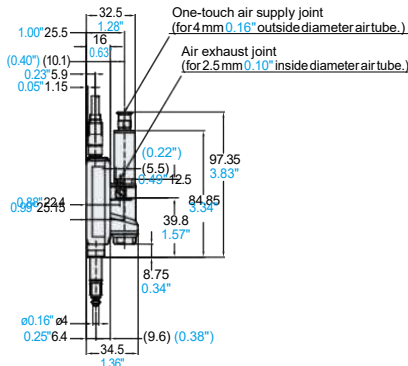
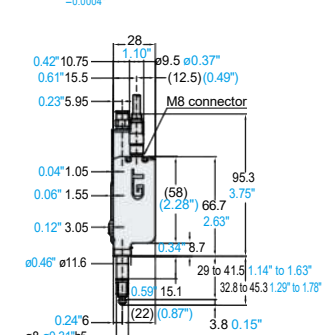
Cable connection  
(Straight)



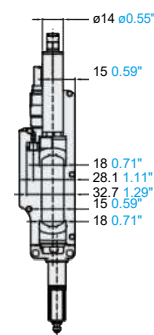
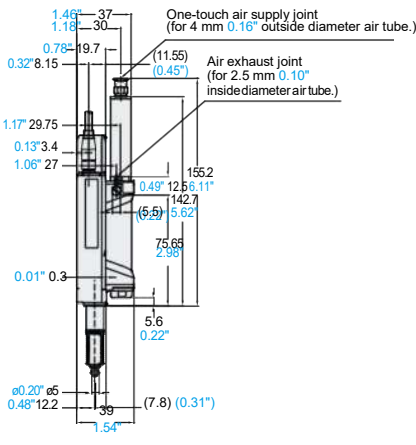
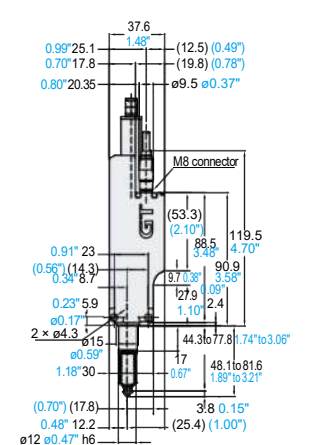
Sensor head  
(Air push)  
**GT2-A12K/GT2-A12**



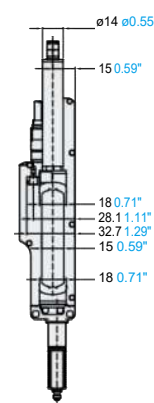
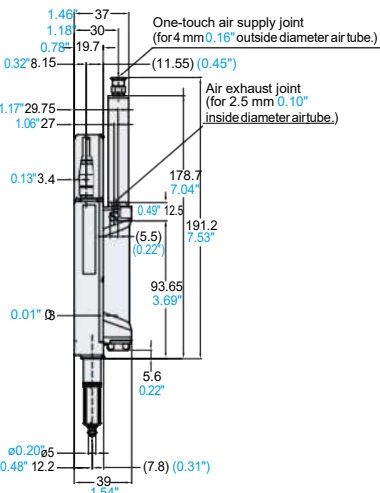
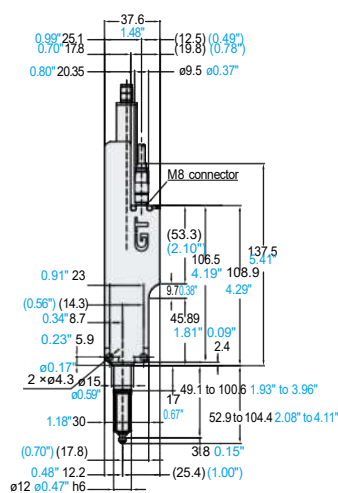
There are no dust boots on the low stress type GT2-A12L/A12KL



Sensor head  
(Air push)  
**GT2-A32**

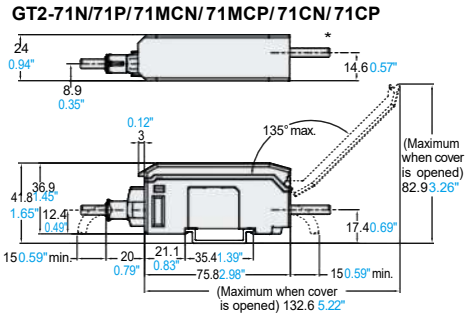


Sensor head  
(Air push)  
**GT2-A50**



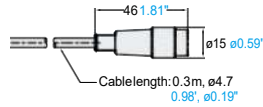
## DIMENSIONS

### Amplifier unit DIN-rail mount type

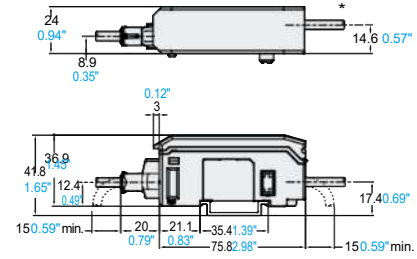


\* Cable specifications  
 GT2-71N/71P:  $\phi 4.7$ , 12-core  $\times$  Brown/Blue: 0.20 mm<sup>2</sup>, Black/White/Gray/Orange/Green/Pink/Purple/Yellow/Red/Pink purple: 0.15 mm<sup>2</sup>, Cable length: 2 m  
 GT2-72N/72P:  $\phi 4.7$ , 10-core  $\times$  Black/White/Gray/Orange/Green/Pink/Purple/Yellow/Red/Pink purple: 0.15 mm<sup>2</sup>, Cable length: 2 m

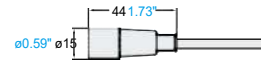
### GT2-71MCN/71MCP/71CN/71CP/72CN/72CP Connector (connector type/analog output type amplifier unit)



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

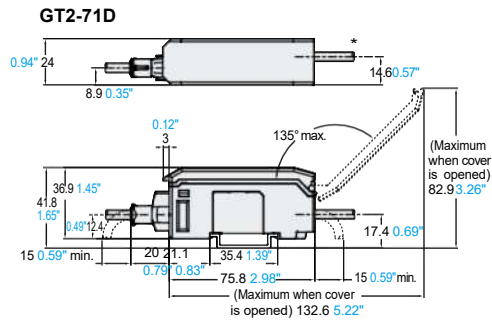


### GT2-CA2M/CA10M Connection cable



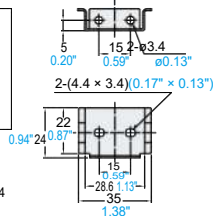
\* Cable specifications  
 Outer diameter:  $\phi 4.7$  mm  $\phi 0.19$ ", Cable length: 2m 6.6' (GT2-CA2M), 10m 32.8' (GT2-CA10M), 12-core  $\times$  Brown/Blue: 0.20 mm<sup>2</sup>, Black/White/Gray/Orange/Green/Pink/Purple/Yellow/Red/Pink purple: 0.15 mm<sup>2</sup>

### Amplifier unit Pulse output



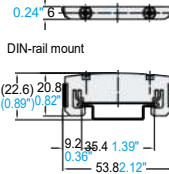
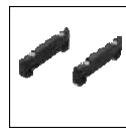
\* Cable specifications  
 Outer diameter:  $\phi 4.7$  mm  $\phi 0.19$ ", Cable length: 2 m 6.6', 9-core  $\times$  Brown/Blue/Purple/Pink/Orange/Green/Gray/White/Black: 0.15 mm<sup>2</sup>

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



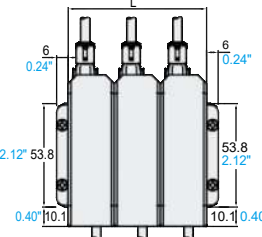
Material: SUS304

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



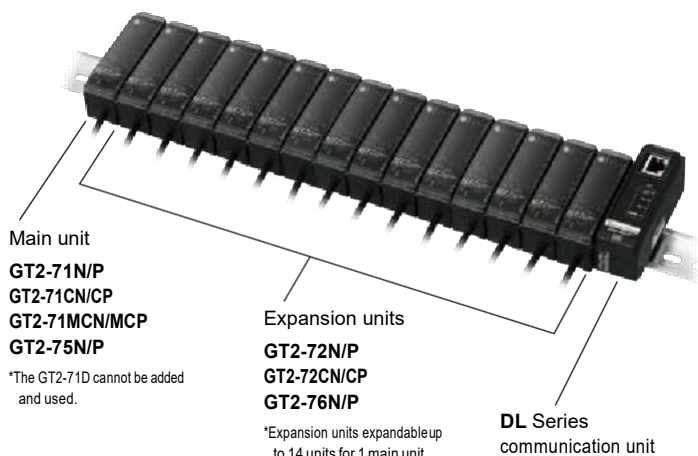
Material: Polycarbonate, Stainless steel

### 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"

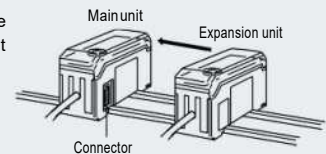
## SYSTEM CONFIGURATION



## Adding expansion units to the main unit

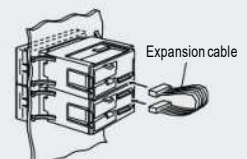
### Expand with the side connector.

To add a unit, please use the separately available end unit (OP-26751).



### Expand with the cable included with the expansion unit.

To add a unit, mount vertically with the main unit as the top unit.

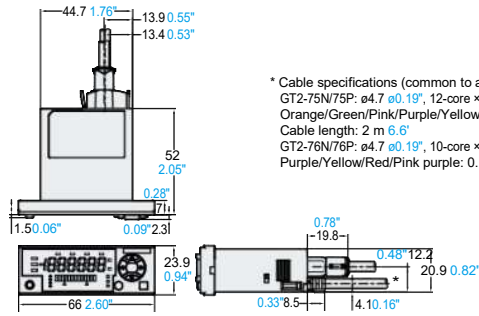


\* To mount horizontally, the separately available OP-35361 (expansion cable 300 mm 11.81") is required.

Amplifier unit  
Panel mount type

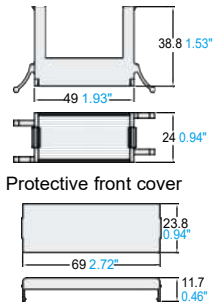


GT2-75N/75P/76N/76P

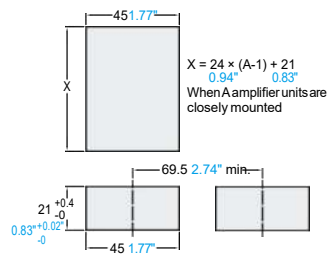


\* Cable specifications (common to all amplifier units)  
 GT2-75N/75P:  $\phi 4.7 \pm 0.19$ ", 12-core  $\times$  Brown/Blue: 0.20 mm<sup>2</sup>, Black/White/Gray/Orange/Green/Pink/Purple/Yellow/Red/Pink purple: 0.15 mm<sup>2</sup>, Cable length: 2 m 6.6'  
 GT2-76N/76P:  $\phi 4.7 \pm 0.19$ ", 10-core  $\times$  Black/White/Gray/Orange/Green/Pink/Purple/Yellow/Red/Pink purple: 0.15 mm<sup>2</sup>, Cable length: 2 m 6.6'

Panel mounting bracket  
(Accessory)  
OP-84394

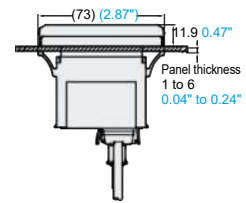


Panel cutout



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

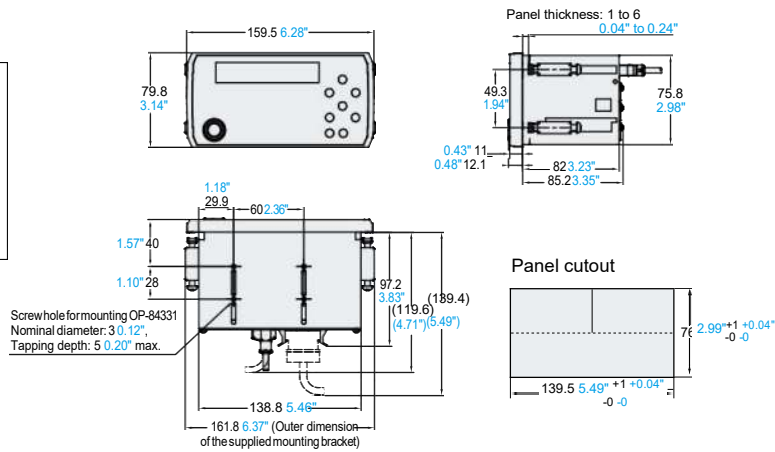
Panel mounting bracket



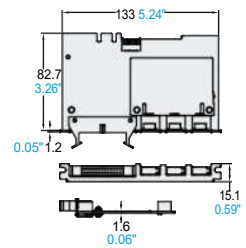
Amplifier unit  
Large display  
GT2-100N/100P



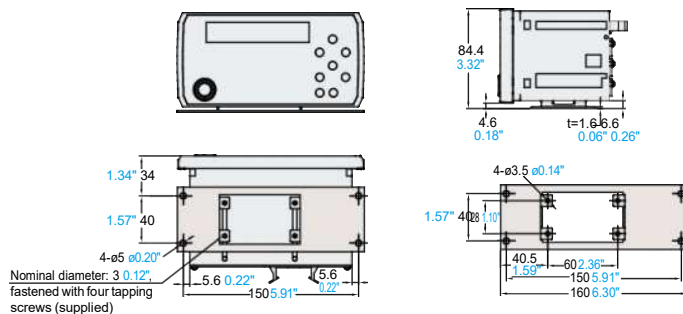
When the supplied mounting bracket is attached



GT2-E3N/E3P Expansion board



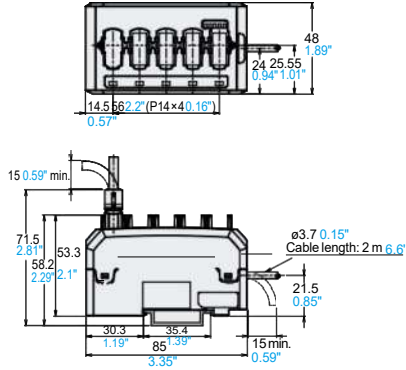
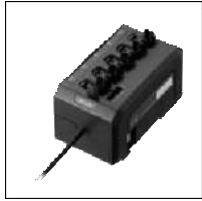
When the optional mounting bracket (OP-84331) is used



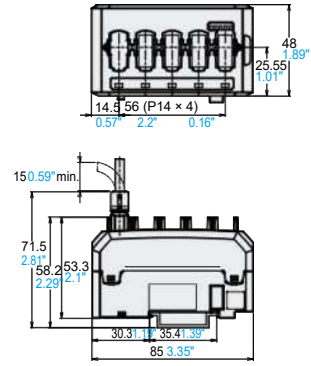


DIMENSIONS

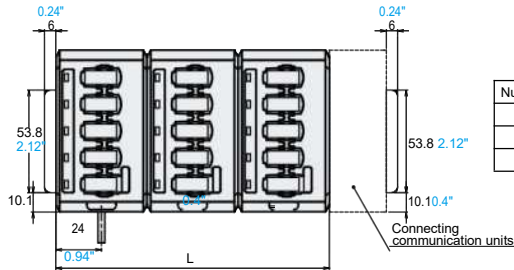
Amplifier unit  
Multi-head type main unit  
**GT2-500**



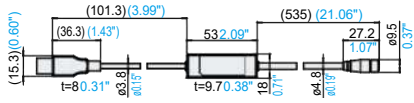
Amplifier unit  
Multi-head type expansion unit  
**GT2-550**



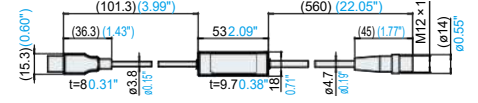
When amplifier units are added



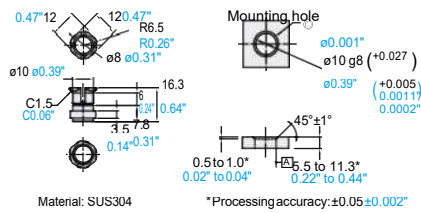
USB Amplifier unit  
**GT2-UB1**



IO unit  
**DL-NS1**



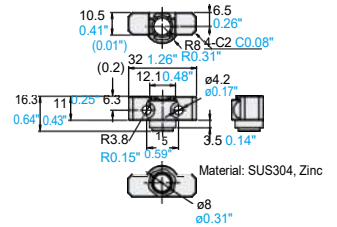
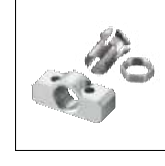
Sensor head  
mounting bracket A  
(Optional)  
**OP-76874**



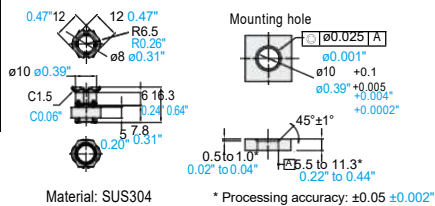
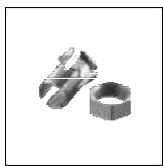
Sensor head  
mounting bracket B  
(Optional)  
**OP-76875**



Sensor head  
mounting bracket E  
(Optional)  
**OP-87220**



Sensor head  
mounting bracket C  
(Optional)  
**OP-84396**





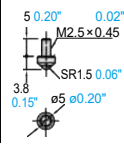
Contact

Standard  
OP-77678



Material:  
OP-77678  
SUS304  
SUS440C

Super-tough  
OP-77682



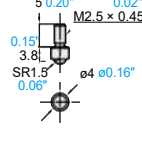
OP-77682  
SUS304  
Super-tough  
tungsten alloy

Standard (small)  
OP-87984



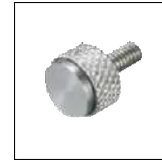
Material:  
OP-87984  
SUS304  
SUS440C

Super-tough (small)  
OP-87985

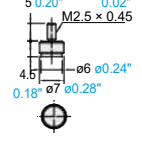


OP-87985  
SUS304  
Super-tough  
tungsten alloy

Flat plate (Optional)  
OP-77679



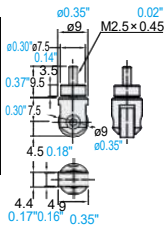
Material: SUS304  
Super-tough  
tungsten alloy



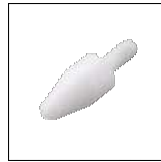
Roller (Optional)  
OP-77680



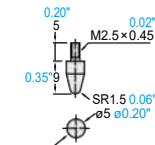
Material: SUS304  
SUS440C



Fluorocarbon resin  
(Optional)  
OP-80228



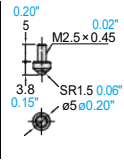
Material: Fluorocarbon resin (PTFE)



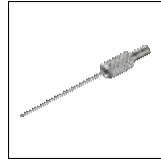
Ceramic  
(Optional)  
OP-81970



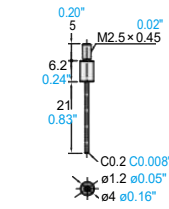
Material: SUS304, Ceramic



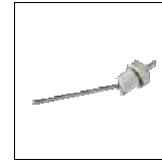
Needle  
(Optional)  
OP-77681



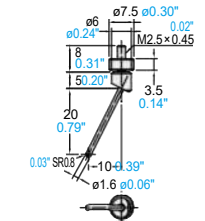
Material: SUS304  
Super-tough  
tungsten alloy



Offset  
(Optional)  
OP-77683



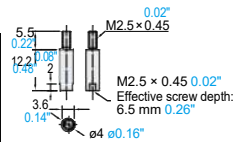
Material: SUS304  
Super-tough  
tungsten alloy



Spacer  
(Optional)  
OP-77684



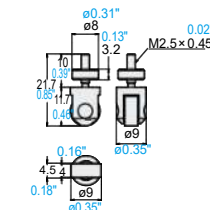
Material: SUS304



Roller (high-accuracy)  
(Optional)  
OP-93332



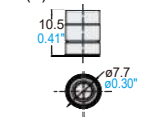
Material: SUS304  
SUS303  
SUS440C



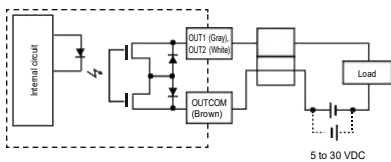
Replacement dust seal  
Applicable models GT2-PA12(K)  
OP-87932



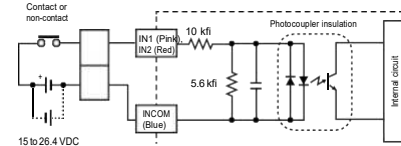
\* Attached to the sensor head.



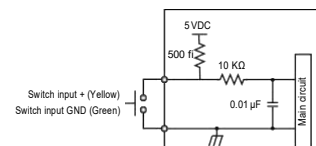
Output circuit of USB connection I/O unit  
DL-NS1



Input circuit of USB connection I/O unit  
DL-NS1



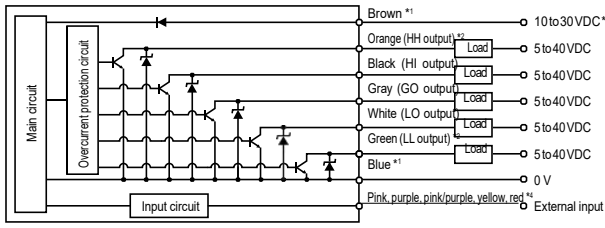
Switch input circuit of USB connection  
I/O unit  
DL-NS1



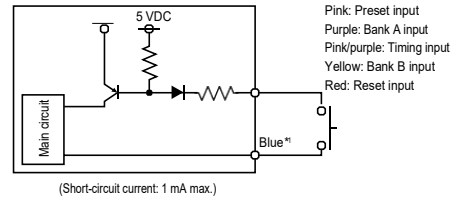
\*Do not apply voltage between  
switch input + and switch input GND.

# INPUT/OUTPUT CIRCUIT DIAGRAMS

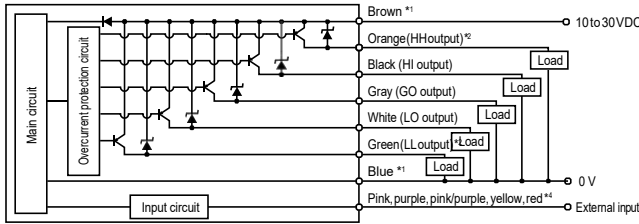
## I/O circuit GT2-71N/72N/71CN/72CN/71MCN/75N/76N



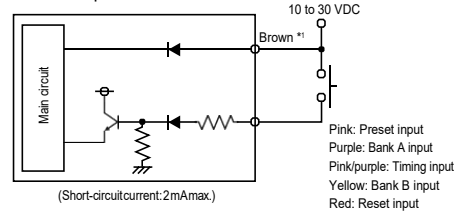
## External input circuit



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



## External input circuit



\*1 Brown and blue are applicable only to main units (GT2-71N/71P/71CN/71CP/71MCN/71MCP/75N/75P).

Not applicable 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.

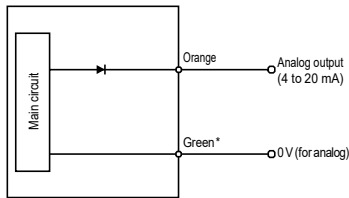
\*2 The orange and green wires are used as analog output cables for the analog type amplifier unit (GT2-71MCN/71MCP).

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).

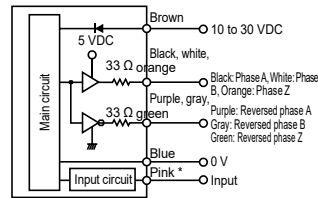
\*4 For details on external input, refer to the external input circuit diagram.

## Analog output circuit GT2-71MCN/71MCP



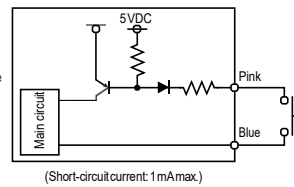
\* The green and blue wires are common internally.

## Pulse output amplifier unit GT2-71D I/O circuit



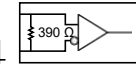
\* For details of the external input, refer to the diagram of the external input circuit.

## External input circuit

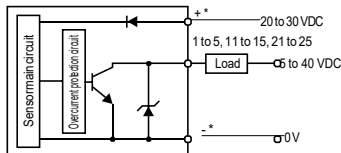


## Recommended input device

AM26LS32 line receiver or equivalent device

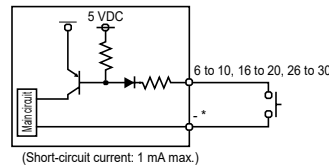


## Output circuit of the large display amplifier unit GT2-100N/GT2-E3N (Pin Nos. 1 to 5, 11 to 15, 21 to 25)



\* 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)

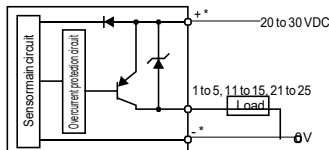


\* The - terminal is provided in the GT2-100N only. It is not provided in the GT2-E3N.

## Multi-head amplifier unit GT2-500 (main unit) The power supply cable is as follows.

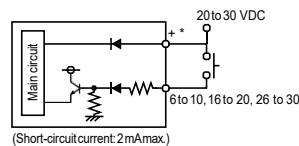


## Output circuit of the large display amplifier unit GT2-100P/GT2-E3P (Pin Nos. 1 to 5, 11 to 15, 21 to 25)



\* 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)



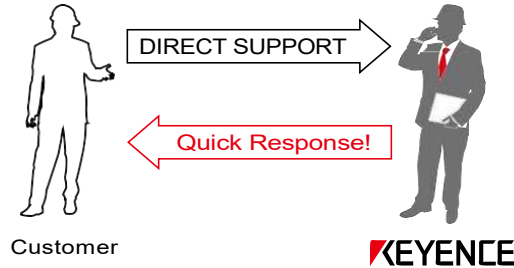
\* The + terminal is provided in the GT2-100P only. It is not provided in the GT2-E3P.

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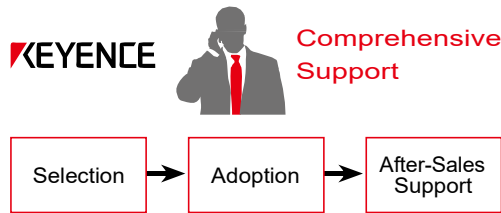
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