Sony Manufacturing Systems Corporation

Digital Gauge

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LT1A series

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Sony Manufacturing Systems Corporation

Direct Current Voltage Generator (FLUKE 5700A) Direct Current Voltage Generator (HP3458A)

National Institute of Advanced Industrial Science and Technology (AIST) Iodine saturation absorption stabilized He-Ne laser at 633nm Speed of light [m/s] c = 299792458

International Bureau of Weights and Measures (BIPM) L = c / (2 * pi * n)

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Applications

Multipoint measurement of turbine blades
Measures the blade shape of aircraft turbine blades.

Camshaft displacement measurement
Measuring the height of camshaft lobes and journals.

Multipoint measurement of liquid crystal panels
Measurement can be conducted easily in a small space by using a slim-shape measuring unit with fixture.

Measurement of hard disc flatness
Measuring the flatness of mass-produced discs.

Measurement of the height of chassis height
Measurement can be conducted easily in a small space by using a slim-shape measuring unit for measuring multiple points on a chassis.

Measurement of motor shaft deviation
Measurement of a high-speed spinning object is possible by utilizing a vibration-resistant gauge.

Positioning control
Measuring the thickness and flatness of objects moving at high-speed, such as metal plates, resin boards, and film, as well as to control the position of feeding rollers.

Measurement of the height of high-density mounting wiring boards
High-density measurement is possible with a slim-shaped measuring unit.

Combination with machine tools
Measuring the position of the grinding stone of surface-grinding machines.

Measurement of inner diameter
Measuring the inner diameter of work.

Measurement of crimp height
Measuring the calking height of crimp terminal.

Measurement of material strength
Applicable for strength tests of various materials such as metal, resin materials, and wood. Measuring unit is resistant to vibration.

Measurement of fastener height
Measures the height of screws in order to control the amount of torque.

Measurement of crimp height
Measures the calking height of crimp terminal.

Measurement of inner diameter
Measuring the inner diameter of work.

Measurement of material strength
Applicable for strength tests of various materials such as metal, resin materials, and wood. Measuring unit is resistant to vibration.

Measurement of fastener height
Measures the height of screws in order to control the amount of torque.

Automatic measurement and screening
Measurement/GO decisions can be performed on the production line.
<table>
<thead>
<tr>
<th>DIN size</th>
<th>DE</th>
<th>DL</th>
</tr>
</thead>
<tbody>
<tr>
<td>LT30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT30</td>
<td></td>
<td></td>
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<td>LT30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT20A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Full type:
- LY71
- LY72
- LY71, LY72
- LY71, LY72
- LY71, LY72
- LY71, LY72
- LY71, LY72
- LY71, LY72
- LY71, LY72

### Interface:
- MG10
- MG20-DK
- MG10
- MG10
- MG10
- MG10

### Measuring range (mm):
- 2
- 10
- 15
- 25
- 30

### Resolution (µm):
- 0.1
- 0.5
- 1
- 5
- 10

### Lineup:
- DK
- DE
- DG
- DT
- DL

### Table:
<table>
<thead>
<tr>
<th>Resistor (Ω)</th>
<th>Lineup</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>DK502AR, DK502BR (Straight) DK502ALR, DK502BLR (Right angle)</td>
</tr>
<tr>
<td>5.2</td>
<td>DK502AR, DK502BR (Straight) DK502ALR, DK502BLR (Right angle)</td>
</tr>
<tr>
<td>10</td>
<td>DK802AR, DK802BR (Straight) DK802ALR, DK802BLR (Right angle)</td>
</tr>
<tr>
<td>12</td>
<td>DK812AR, DK812BR (Straight) DK812ALR, DK812BLR (Right angle)</td>
</tr>
<tr>
<td>25</td>
<td>DK805AR, DK805BR (Straight) DK805ALR, DK805BLR (Right angle)</td>
</tr>
<tr>
<td>30</td>
<td>DK805AR, DK805BR (Straight) DK805ALR, DK805BLR (Right angle)</td>
</tr>
<tr>
<td>60</td>
<td>DK805AR, DK805BR (Straight) DK805ALR, DK805BLR (Right angle)</td>
</tr>
<tr>
<td>100</td>
<td>DK805AR, DK805BR (Straight) DK805ALR, DK805BLR (Right angle)</td>
</tr>
<tr>
<td>150</td>
<td>DK805AR, DK805BR (Straight) DK805ALR, DK805BLR (Right angle)</td>
</tr>
<tr>
<td>200</td>
<td>DK805AR, DK805BR (Straight) DK805ALR, DK805BLR (Right angle)</td>
</tr>
</tbody>
</table>

### Interfaces:
- MG20-AD
- MG10
- MG10
- MG10
- MG10

### Full type:
- LY71, LY72
- LY71, LY72
- LY71, LY72
- LY71, LY72
- LY71, LY72
- LY71, LY72
- LY71, LY72
- LY71, LY72
- LY71, LY72
- LY71, LY72

### Resolution (µm):
- 0.1
- 0.5
- 1
- 5
- 10
**System**

**Interface unit**

- DT12 5µm/12mm
- DT32 5µm/32mm
- DT512 1µm/12mm
- DG-B/F 0.5µm/ 5.2-205mm
- DL-BR 10µm/ 10,30,60mm
- DL-B 10µm/ 10,30mm
- DK 0.1µm/ 2,5,12mm
- DK 0.5µm/ 2-205mm

**Counter**

- LT10A
- LT11A
- LT20A
- LT30

- DT12 5µm/12mm
- DT32 5µm/32mm
- DT512 1µm/12mm
- DG-B/F 0.5µm/ 5.2-205mm
- DL-BR 10µm/ 10,30,60mm
- DL-B 10µm/ 10,30mm
- DE-BR 0.1µm/ 12,30mm
- DK 0.1µm/ 2,5,12mm
- DK 0.5µm/ 2-205mm

*View in table*

<table>
<thead>
<tr>
<th>Type</th>
<th>Minimum resolution/ effective length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td></td>
</tr>
</tbody>
</table>

*The standard, the specification, and externals might change without a previous notice.*

*Please see P6-7 "Lineup" about the type name.

*Please see P6-7 "Lineup" about the type name.

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**Gauge**

- DG805/DG810 Series 22
- DG10B/DG25B Series 23
- DG50, DG100, DG155, DG205B Series 25
- DG110B 29
- DT512N/P Series 31
- DT12, 32 Series 32
- MT12/13/14 33
- DL-B Series 35
- U Series 36

*The standard, the specification, and externals might change without a previous notice.*

*Please see the end of a book of this catalog for details of the connecting cable.*
DK802A/B Series

High resolution and High accuracy compact digital gauges.

- Measuring range: 2 mm
- Accuracy: ±1 μm, ±1.5 μm
- Resolution: 0.1 μm, 0.5 μm
- Max. response speed: 800 mm/min (Resolution: 0.1 μm)
- Installation: 250 mm/min (Resolution: 0.5 μm)
- Built-in reference point: Excellent resistance to workshop conditions.
- Robust design for harsh environments.

**Digital Gauge**

**Specifications DK802 Series**

<table>
<thead>
<tr>
<th>DTG02A</th>
<th>DTG02B</th>
<th>DTG02C</th>
<th>DTG02D</th>
<th>DTG02E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>0.1 μm</td>
<td>0.5 μm</td>
<td>0.1 μm</td>
<td>0.5 μm</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±1 μm</td>
<td>±1.5 μm</td>
<td>±1 μm</td>
<td>±1.5 μm</td>
</tr>
<tr>
<td>Measuring speed</td>
<td>0 m/min</td>
<td>10 m/min</td>
<td>20 m/min</td>
<td>50 m/min</td>
</tr>
<tr>
<td>Measuring force</td>
<td>0.45 ± 0.25 N</td>
<td>0.9 ± 0.5 N</td>
<td>1.5 ± 0.75 N</td>
<td>3 ± 1.5 N</td>
</tr>
<tr>
<td>Measuring points</td>
<td>1 location (at 1 mm position of spindle movement)</td>
<td>2 locations (at 1 mm and 0.5 mm positions of spindle movement)</td>
<td>3 locations (at 1 mm, 0.5 mm, and 0.1 mm positions of spindle movement)</td>
<td>4 locations (at 1 mm, 0.5 mm, 0.1 mm, and 0.05 mm positions of spindle movement)</td>
</tr>
<tr>
<td>Measurement range</td>
<td>5 mm</td>
<td>10 mm</td>
<td>15 mm</td>
<td>20 mm</td>
</tr>
<tr>
<td>DC power supply</td>
<td>5 V, 0.5 A</td>
<td>5 V, 1 A</td>
<td>5 V, 1.5 A</td>
<td>5 V, 2 A</td>
</tr>
<tr>
<td>Maximum response speed</td>
<td>100 m/s</td>
<td>200 m/s</td>
<td>300 m/s</td>
<td>400 m/s</td>
</tr>
<tr>
<td>Measuring range</td>
<td>0 to 1000 m</td>
<td>0 to 2000 m</td>
<td>0 to 3000 m</td>
<td>0 to 4000 m</td>
</tr>
<tr>
<td>Measuring force</td>
<td>0.25 N</td>
<td>0.5 N</td>
<td>1 N</td>
<td>2 N</td>
</tr>
<tr>
<td>Resolution</td>
<td>±1 μm</td>
<td>±1.5 μm</td>
<td>±2 μm</td>
<td>±3 μm</td>
</tr>
</tbody>
</table>

**Digital Gauge**

**Specifications DK805 Series**

- Magnetic principle
- Excellent resistance to workshop conditions.
- Resistant to oil, water, dust, vibration, and shock.
- Accuracy: ±1 μm, ±1.5 μm
- Resolution: 0.1 μm, 0.5 μm
- Measuring range: 5 mm
- Low measuring force
- Spindle can be moved vertically with an air pressure device
- Easy installation. Flange type gauges also available.

**DK802AR/DK802AR5/DK802BLR/DK802BLR5**

- 1W
- DC +5 V
- 5%
- -20˚C to 60˚C
- 0˚C to 50˚C
- IP66 (not including interpolation box and connectors)

**DK805AFLR/DK805BFLR**

- 2 mm (0.08”)
- Measuring range: 5 mm
- Measuring force: 0.25 N
- Resolution: ±1 μm, ±1.5 μm
- Maximum response speed:
  - Air driving: 100 m/s
  - Vacuum suction (DK802ALR / DK802ALR5 / DK802BLR / DK802BLR5)

**DK802A/B Series**

- Robust design for harsh environments.

**DK805A/B Series**

- High accuracy, compact, and slim gauges suitable for installation on machines.
### DK812A/B Series

High accuracy, rugged gauges. Suitable for installation on machine.

- Measuring range: 12 mm
- Accuracy: 1 µm, 1.5 µm
- Resolution: 0.1 µm, 0.5 µm
- Max. response speed: 800 mm/min (Resolution: 0.1 µm)
- Robust design for harsh environments.

#### Dimensions

![Digital Gauge](image)

**DK812A/LD/122AL/5/8**

- Cable length: 2500 mm (98.4 in)

**DK812A/LD/122AL/5/8**

- Cable length: 2500 mm (98.4 in)

#### Specifications DK812 Series

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air pressure</strong></td>
<td>0.03 MPa</td>
<td>0.03 MPa</td>
<td>0.03 MPa</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td>±0.3 µm</td>
<td>±0.3 µm</td>
<td>±0.3 µm</td>
</tr>
<tr>
<td><strong>Resolution</strong></td>
<td>0.1 µm</td>
<td>0.1 µm</td>
<td>0.1 µm</td>
</tr>
<tr>
<td><strong>Measuring range</strong></td>
<td>12 mm</td>
<td>12 mm</td>
<td>12 mm</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>100-120V, 50/60 Hz</td>
<td>100-120V, 50/60 Hz</td>
<td>100-120V, 50/60 Hz</td>
</tr>
<tr>
<td><strong>Cable length</strong></td>
<td>2500 mm</td>
<td>2500 mm</td>
<td>2500 mm</td>
</tr>
</tbody>
</table>

#### Additional Information

- Please refer to P10 DK 802 A/B for the extension cable (Option).
- The resolution setting needs to be made when connecting to the LT30 series, MG series, and LY70 series. For details, please refer to the respective instruction manual.

### DK10/25 Series

High accuracy, rugged gauges. Suitable for installation on machine.

- Measuring range: 10 mm / 0.39" and 25 mm / 0.98"
- Accuracy: 2 µm
- Resolution: 0.5 µm
- Excellent resistance to workshop conditions.
- High measuring force (10PR5/10PLR5/25PR5/25PLR5)
- Robust design for harsh environments.

#### Dimensions

![Digital Gauge](image)

**DK10PL/B**

- Cable length: 1500 mm (59 in)

**DK25PL/B**

- Cable length: 1500 mm (59 in)

#### Specifications DK10/25 Series

<table>
<thead>
<tr>
<th>Model</th>
<th>DK10PL/B</th>
<th>DK25PL/B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accuracy</strong></td>
<td>±0.3 µm</td>
<td>±0.3 µm</td>
</tr>
<tr>
<td><strong>Resolution</strong></td>
<td>0.5 µm</td>
<td>0.5 µm</td>
</tr>
<tr>
<td><strong>Measuring range</strong></td>
<td>10 mm / 0.39&quot;</td>
<td>25 mm / 0.98&quot;</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>100-120V, 50/60 Hz</td>
<td>100-120V, 50/60 Hz</td>
</tr>
<tr>
<td><strong>Cable length</strong></td>
<td>1500 mm</td>
<td>1500 mm</td>
</tr>
</tbody>
</table>

#### Additional Information

- A variety of accessories available (See "Accessories for Gauges").
- Direct connected to A/B quadrature counter.

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1. Please refer to P10 DK 802 A/B about the extension cable (Option).
2. Robust design for harsh environments.
3. The resolution setting needs to be made when connecting to the LT30 series, MG series, and LY70 series. For details, please refer to the respective instruction manual.
DK50/100 Series
High accuracy, rugged gauges. Suitable for installation on machine.

- Measuring range: 50 mm / 1.97", 100 mm / 3.94"
- Accuracy: ± 0.02 mm / 0.0008" (DK50PR5), ± 0.04 mm / 0.0016" (DK100PR5)
- Resolution: 0.5 µm / 0.00002" (DK50PR5), ± 1.0 µm / 0.00004" (DK100PR5)
- Measuring force (DK50PR5): 2.5 N, Measuring force (DK100PR5): 4.9 N
- Excellent resistance to workshop conditions.

Accessories
+ P M4x5 screw (2 pcs.), Instruction Manual

Specifications
<table>
<thead>
<tr>
<th>Model</th>
<th>DK50PR5</th>
<th>DK100PR5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>A/B/Z phase voltage-differential line driver output (compliant with EIA-422)</td>
<td></td>
</tr>
<tr>
<td>Measuring range</td>
<td>50 mm</td>
<td>100 mm</td>
</tr>
<tr>
<td>Accuracy (µm)</td>
<td>±0.02</td>
<td>±0.04</td>
</tr>
<tr>
<td>Measuring force (N)</td>
<td>2.5</td>
<td>4.9</td>
</tr>
<tr>
<td>Measuring resolution (µm)</td>
<td>±1.0</td>
<td></td>
</tr>
<tr>
<td>Measuring range (11 mm)</td>
<td>0.0 ± 1.0 µm</td>
<td></td>
</tr>
<tr>
<td>Operating temperature (°C)</td>
<td>0°C to 60°C</td>
<td></td>
</tr>
<tr>
<td>Power in (V):</td>
<td>24 ± 10%</td>
<td></td>
</tr>
<tr>
<td>Max. current (mA)</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>Cable length (mm)</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>Reference position</td>
<td>One location of 50 mm position (specifies movement)</td>
<td></td>
</tr>
<tr>
<td>Maximum measurement rate</td>
<td>200 mm/sec</td>
<td></td>
</tr>
<tr>
<td>Spring resistance</td>
<td>0.05 N/mm</td>
<td></td>
</tr>
<tr>
<td>Measuring range : 155 mm / 6.1&quot; and 205 mm / 8.07&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring range : 50 mm / 1.97&quot;, 100 mm / 3.94&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protective structure: Magnetic structure, Magnetic structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring range : 155 mm / 6.1&quot; and 205 mm / 8.07&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring range : 50 mm / 1.97&quot;, 100 mm / 3.94&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protective structure: Magnetic structure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Digital Gauge

DK155/205 Series
High accuracy, rugged gauges. Suitable for installation on machine.

- Measuring range: 155 mm / 6.1" and 205 mm / 8.07"
- Accuracy: ± 0.05 mm / 0.002" (DK155PR5), ± 0.10 mm / 0.004" (DK205PR5)
- Resolution: 0.5 µm / 0.00002" (DK155PR5), ± 1.0 µm / 0.00004" (DK205PR5)
- Measuring force (DK155PR5): 0.65 N, Measuring force (DK205PR5): 4.9 N
- Excellent resistance to workshop conditions.

Accessories
+ P M4x5 screw (2 pcs.), Instruction Manual

Specifications
<table>
<thead>
<tr>
<th>Model</th>
<th>DK155PR5</th>
<th>DK205PR5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>A/B/Z phase voltage-differential line driver output (compliant with EIA-422)</td>
<td></td>
</tr>
<tr>
<td>Measuring range</td>
<td>155 mm</td>
<td>205 mm</td>
</tr>
<tr>
<td>Accuracy (µm)</td>
<td>±0.05</td>
<td>±0.10</td>
</tr>
<tr>
<td>Measuring force (N)</td>
<td>0.65</td>
<td>4.9</td>
</tr>
<tr>
<td>Measuring resolution (µm)</td>
<td>±1.0</td>
<td></td>
</tr>
<tr>
<td>Measuring range (11 mm)</td>
<td>0.0 ± 1.0 µm</td>
<td></td>
</tr>
<tr>
<td>Operating temperature (°C)</td>
<td>0°C to 60°C</td>
<td></td>
</tr>
<tr>
<td>Power in (V):</td>
<td>24 ± 10%</td>
<td></td>
</tr>
<tr>
<td>Max. current (mA)</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>Cable length (mm)</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>Reference position</td>
<td>One location of 155 mm position (specifies movement)</td>
<td></td>
</tr>
<tr>
<td>Maximum measurement rate</td>
<td>200 mm/sec</td>
<td></td>
</tr>
<tr>
<td>Spring resistance</td>
<td>0.05 N/mm</td>
<td></td>
</tr>
<tr>
<td>Measuring range : 155 mm / 6.1&quot; and 205 mm / 8.07&quot;</td>
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<td></td>
</tr>
<tr>
<td>Measuring range : 50 mm / 1.97&quot;, 100 mm / 3.94&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protective structure: Magnetic structure, Magnetic structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring range : 155 mm / 6.1&quot; and 205 mm / 8.07&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring range : 50 mm / 1.97&quot;, 100 mm / 3.94&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protective structure: Magnetic structure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Digital Gauge
The resolution setting needs to be made when connecting to the LT30 series, MG series, and LY70 series. For details, please refer to the respective instruction manual.

**Accessories**
- P M4x5 screw (2 pcs.), feeler DZ-121, lift lever DZ-161, Instruction Manual

Use the CE22 series extension cables for bare wires (optional accessories).

**Minimum 5 million cycles without shock**

*=If extending the cable, the supply voltage is +5 V.*

**Output cable length**
- DZ-121 (Mount screw M2.5)
- Feeler Ø20 mm
- Approx. 2.5 m

**AM26C32**
- Output: phase A/B/Z
- 1 W or less

**DS34C87**
- 5%
- ±
- 0V
- +V
- 20 m/min

**Special specifications**
- 5 MHz
- 200 ns
- 500 kHz
- 2.5 MHz
- 100 ns
- 100 m/min

**DK800A standard product**
- 500 ns
- 200 ns
- 400 ns
- 500 kHz

**DK110NLR5**
- 400 ns
- 5 MHz
- 1.2 µs
- 500 kHz

**DK20**
- 1.2 µs
- 2.5 MHz

**DK20/S**
- 2.5 MHz
- 100 m/min

**DK20/S**
- 5 MHz
- 200 ns

**Output Signal Alarm**
- The signals output from this measuring unit are A/B quadrature signal, Z signal in the form of voltage-differential line driver output compliant with EIA-422.

**Output Signal Phase Difference**
- In maximum standard specifications, the minimum phase difference is fixed at 50 ns, but the phase difference proportional to the amount traveled is output. The phase difference changes in integer multiples of 50 ns. Also, the minimum phase difference for the A and B is 50 ns.

**Output Signal Phase Difference**
- The reference point is the synchronized reference point that is at Hi impedance when the phase A and phase B are at the Hi level.

**DK Series operating cautions**
- In operating the feeler with a vacuum pump, use such an air-pass system as shown in Fig. 1 to enable air driving. The optimum vacuum rate is 0.04 to 0.067 MPa. Further, put such air offices as shown in Fig. 2 on a tube from the air lifter connector to control the air suction and discharge speed. The feeler is held at the air discharge to the vacuum pump.

**Fig. 1 Air-pass System**

**Fig. 2 Dimensions of DZ-121**

**DK Series measuring unit output signals**
- Before using, check that the minimum input phase difference of the control device connected to this measuring unit or the counter is smaller than 50 ns for the DK800A (A signal cycle 200 ns, 5 MHz) or smaller than 100 ns for the DK800B (A signal cycle 400 ns, 2.5 MHz).

**DK800B output signals at maximum response speed (all approx. 80 m/min)**

**DK20/S/B output signals at maximum response speed (all approx. 42 m/min)**

**Before using, check that the minimum input phase difference of the control device connected to this measuring unit or the counter is smaller than 50 ns for DK10-110 series (A signal cycle 200 ns, 5 MHz).**

**DK10-120/S output signals at maximum response speed (all approx. 80 m/min)**

**DK10-12/S output signals at maximum response speed (all approx. 42 m/min)**

**Output signals at maximum response speed**
- The travel amount of the measuring unit is detected every 50 ns for the DK800A and every 100 ns for the DK800B, and the phase difference proportional to the amount traveled is output. The phase difference changes in integer multiples of 50 ns or 100 ns. Also, the minimum phase difference for the A and B is 50 ns for the DK800A and 100 ns for the DK800B.

**In standard specifications, the minimum phase difference is fixed at 50 ns, but the minimum phase difference in the table below are available as special specifications.**

**Output Signal Phase Difference**
- In maximum standard specifications, the minimum phase difference is fixed at 50 ns for the DK800A and 100 ns for the DK800B, but the minimum phase difference in the table below are available as special specifications.

**Output Signal Phase Difference**
- If the response speed is exceeded, the A/B output from this measuring unit changes to Hi impedance for about 400 ms to serve as an alarm.

**Output Signal Alarm**
- If the response speed is exceeded, the A/B output from this measuring unit changes to Hi impedance for about 400 ms to serve as an alarm.

**DK10-12/S output signals at maximum response speed**
- The travel amount of the measuring unit is detected every 50 ns, and the phase difference proportional to the amount traveled is output. The phase difference changes in integer multiples of 50 ns. Also, the minimum phase difference for the A and B is 50 ns.

**DK110NLR5**
- If the response speed is exceeded, the A/B output from this measuring unit changes to Hi impedance for about 400 ms to serve as an alarm.

**Output Signal Alarm**
- If the response speed is exceeded, the A/B output from this measuring unit changes to Hi impedance for about 400 ms to serve as an alarm.

**DK10-25/S/B output signals at maximum response speed**
- The travel amount of the measuring unit is detected every 50 ns, but the minimum phase difference in the table below are available as special specifications.

**Digital gauge stand DZ-531 and measuring force balancer (option). The force is maintained constant regardless of spindle movement direction.**

**Reduced measuring force**

- The measuring force can be reduced to a minimum of 0.3 N in three selectable steps using the measuring balance (option). The force is maintained constant regardless of spindle movement direction.

**Soft spindle return**

- A braking mechanism reduces spindle return speed, thereby eliminating the danger of damaging either the surface plate or the workplace.
### Accessories (for DK series)

**DZ-122 Feeder** (for DK Series, DG109 and DG509)
- Contact point: ø 2.5 mm/0.098" carbide ball tip (Mounting screw: M2.5 x 0.45)

**DZ-123 Feeder** (for DK Series, DG805BL/M109/M10BL)
- Contact point: ø 2.5 mm/0.098" carbide ball tip (Mounting screw: M2.5 x 0.4)

**DZ-53! Digital gauging stand** (for DK110, DG1109)
- Surface plate material: gabbro
- Surface plate flatness: 3 µm
- Surface plate size: 350mm x 350mm (13.78"
- Maximum workspace height: approx. 350mm (13.78"
- Gauge mounting hole: ø 20mm (0.79"
- Mass: 38kg (83.8 lbs)

**DZ-59! Measuring force balance** (for DK110, DG1109)
- Contact point: ø 2.5 mm/0.098" carbide ball tip (Mounting screw: M2.5 x 0.45)

**DZ-121! Feeder** (for DK110, DG109/39N)
- Contact point: ø 2.5 mm/0.098" carbide ball tip (Mounting screw: M2.5 x 0.45)

**DZ-191 Coupling**
- Contact point: ø 2.5 mm/0.098" carbide ball tip (Mounting screw: M2.5 x 0.4)

#### Other accessories
- CE08 Extension cable: CE08-01 (1m), CE08-03 (3m), CE08-10 (5m), CE08-15 (10m)
- CE22 Extension cable: CE22-01 (1m), CE22-03 (3m), CE22-10 (5m), CE22-15 (10m)
- DK-Extension cable: DK-01 (1m), DK-03 (3m), DK-10 (10m)
- DK-Extension cable: DK-T01 (1m), DK-T03 (3m), DK-T10 (10m)

Please refer to page 54 for the details of the screw.

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### Memo

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DE-BR Series

High precision digital gauge for submicron position detection and measuring

- Magnetic principle
- High accuracy: 1 μm
- High resolution: 0.1 μm
- Measuring range: 12 mm / 0.47" and 30 mm / 1.18"
- Built-in zero point
- Protective design grade: equivalent to IP64 with optional bellows.

**Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>DL330B</th>
<th>DE330B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>12 mm / 0.47&quot;</td>
<td>30 mm / 1.18&quot;</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.1 μm</td>
<td>0.1 μm</td>
</tr>
<tr>
<td>Measuring range (0 \text{ to } 12 \text{ mm} )</td>
<td>0.1 μm</td>
<td>0.1 μm</td>
</tr>
<tr>
<td>Measuring range (0 \text{ to } 30 \text{ mm} )</td>
<td>0.3 μm</td>
<td>0.3 μm</td>
</tr>
<tr>
<td>Measuring range (12 \text{ to } 30 \text{ mm} )</td>
<td>0.5 μm</td>
<td>0.5 μm</td>
</tr>
<tr>
<td>Measuring range (30 \text{ to } 45 \text{ mm} )</td>
<td>1 μm</td>
<td>1 μm</td>
</tr>
</tbody>
</table>

**Dimensions**

- DE330B

**Accessories**

- DE-BR Series Bellows set (for DL330B, DE330B)
- DE-BR Series Bellows set (for DE129B)

**SZ70-1 Adapter**

- SZ70-1 is required for connecting the following scale units and counters:
  - Gauge unit: DE-BR Series, DG-B Series
  - Counter: LH71A, LH72-3, LY71 and LY72
  - Adapter DZ51 is also required

**SZ70-2 Adapter**

- SZ70-2 is required for connecting the following scale units and counters:
  - Gauge unit: DE-BR Series
  - Counter: M4 series


- Surface plate material: aluminum ceramic
- Surface plate thickness: 2 mm
- Surface plate size: 110 mm x 110 mm (4.33"
- Maximum thickness height: approx. 160 mm (6.34"
- Gauge mounting hole: ø 20 mm (0.79"
- Ideal: ± 0.008 mm (0.0003"

**DZ-502 Bellows set (for DE129B)**

- With the extension spindle attached, the spindle is extended by 8 mm.

**DZ-510 Feeder set**

- Plastic ball contact point at 0.04 mm gap ball
- Flat carbide contact point in front of steel ball
- Pin contact point
- Feeder tip: 3 mm dia. carbide ball with PO2-10 3.04 mm socket in lifting and DZ512

**DZ-191 Coupling**

- Mounting stem diameter: 10 mm
- Operating temperature: 0 °C to 50 °C (32 °F to 122 °F)
- Storage temperature: 0 °C to 60 °C (32 °F to 140 °F)
- Power consumption: 0.14 W at 5 VDC
- Cable length: 300 mm (11.81")
- Feeler mass (excl. cable unit): 0.2 N (0.07 oz)
- Resolution: 0.1 μm (0.0000039"
- Accuracy (at 20 °C / 68 °F): ±0.7 μm (0.000027"
- Maximum response speed: 19.3 mm/s (0.759")
- Model: DZ-191

**SZ70-1 Adapter**

- Mounting screw for fixing screw (M 2.5)
- Mounting stem diameter: 10 mm
- Operating temperature: 0 °C to 50 °C (32 °F to 122 °F)
- Storage temperature: 0 °C to 60 °C (32 °F to 140 °F)
- Power consumption: 0.14 W at 5 VDC
- Cable length: 300 mm (11.81")
- Feeler mass (excl. cable unit): 0.2 N (0.07 oz)
- Resolution: 0.1 μm (0.0000039"
- Accuracy (at 20 °C / 68 °F): ±0.7 μm (0.000027"
- Maximum response speed: 19.3 mm/s (0.759")
- Model: DZ-191

**SZ70-2 Adapter**

- Mounting screw for fixing screw (M 2.5)
- Mounting stem diameter: 10 mm
- Operating temperature: 0 °C to 50 °C (32 °F to 122 °F)
- Storage temperature: 0 °C to 60 °C (32 °F to 140 °F)
- Power consumption: 0.14 W at 5 VDC
- Cable length: 300 mm (11.81")
- Feeler mass (excl. cable unit): 0.2 N (0.07 oz)
- Resolution: 0.1 μm (0.0000039"
- Accuracy (at 20 °C / 68 °F): ±0.7 μm (0.000027"
- Maximum response speed: 19.3 mm/s (0.759")
- Model: DZ-191


- Surface plate material: aluminum ceramic
- Surface plate thickness: 2 mm
- Surface plate size: 110 mm x 110 mm (4.33"
- Maximum thickness height: approx. 160 mm (6.34"
- Gauge mounting hole: ø 20 mm (0.79"
- Ideal: ± 0.008 mm (0.0003"

**Pre-amp box**

- Pre-amp box: 84/3.31
- 20 m/min zero point detection mode: 0.15/min

**Note:** The four contacts shown at right are included.
DG805 Series, DG810 Series
High accuracy, compact, and slim gauges suitable for installation on machines.

- Magnetic principle
- Excellent resistance to workshop conditions, resistant to oil, water, dust, vibrations, and shocks.
- Resolution: 0.5 m
- Measuring range: 5.2 mm / 0.20” and 10 mm / 0.39”
- Compact and slim design: 10 mm / 0.39” (outer diameter) 7.45 mm / 0.29” (overall length, DG805)
- Low measuring force
- Spindles can be moved vertically with an air pressure device (DG805BL/FL, DG810BL/FL)
- Dustproof bellows (standard).
- Spindle can be moved vertically with an air pressure device (DG805BL/FL, DG810BL/FL).
- Easy installation. Flange type gauges also available.
- A variety of accessories available (See "Accessories for Gauges").

**Digital Gauge**

**Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range</th>
<th>Measuring angle</th>
<th>Resolution</th>
<th>Measuring Range: Ld</th>
<th>Measuring Range: Ld</th>
</tr>
</thead>
<tbody>
<tr>
<td>DG805FL</td>
<td>0.0 to 2.5 m</td>
<td>±0.1 mm</td>
<td>0.5 m</td>
<td>5.2 mm / 0.20”</td>
<td>10 mm / 0.39”</td>
</tr>
<tr>
<td>DG810FL</td>
<td>0.0 to 2.5 m</td>
<td>±0.1 mm</td>
<td>0.5 m</td>
<td>5.2 mm / 0.20”</td>
<td>10 mm / 0.39”</td>
</tr>
</tbody>
</table>

**Dimensions**

- **DG805FL**
  - Cable length: 5000 / 196.85
  - Movement range: 10 mm / 0.39”
  - Resolution: 0.5 m

- **DG810FL**
  - Cable length: 5000 / 196.85
  - Movement range: 25 mm / 0.98”
  - Resolution: 0.5 m

DG810 Series

DG10B, DG25B
High accuracy, rugged gauges. Suitable for installation on machines.

- Excellent resistance to workshop conditions (BP/BS : IP64).
- Resistant to oil, water, dust, vibrations, and shocks.
- Accuracy: 0.5 m
- Resolution: 0.5 m
- Measuring range: 10 mm / 0.39” and 25 mm / 0.98”
- High measuring force (BP/BS)
- Low measuring force (BN/BL)
- Easy installation.
- A variety of accessories available (See "Accessories for Gauges").

**Digital Gauge**

**Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range</th>
<th>Measuring angle</th>
<th>Resolution</th>
<th>Measuring Range: Ld</th>
<th>Measuring Range: Ld</th>
</tr>
</thead>
<tbody>
<tr>
<td>DG10B</td>
<td>0.0 to 2.0 m</td>
<td>±0.2 mm</td>
<td>0.5 m</td>
<td>5.2 mm / 0.20”</td>
<td>10 mm / 0.39”</td>
</tr>
<tr>
<td>DG25B</td>
<td>0.0 to 2.0 m</td>
<td>±0.2 mm</td>
<td>0.5 m</td>
<td>5.2 mm / 0.20”</td>
<td>10 mm / 0.39”</td>
</tr>
</tbody>
</table>

**Dimensions**

- **DG10B**
  - Cable length: 5000 / 196.85
  - Movement range: 5.2 mm / 0.20”
  - Resolution: 0.5 m

- **DG25B**
  - Cable length: 5000 / 196.85
  - Movement range: 10 mm / 0.39”
  - Resolution: 0.5 m

**Accessories for Gauges**

- Various accessories are available, such as...

**Notes**

- ±0.2 m: ±0.2 mm
- ±0.5 m: ±0.5 mm

Unit: mm/inch
**DG50b, DG100b, DG155b, DG205b Series**

- High accuracy, rugged gauges.
- Suitable for installation on machines.

**DG110b Series**

- High accuracy: 4 m
- Resolution: 0.5 µm
- Measuring range: 110 mm / 4.33”
- Reduced measurement error
- Precision dual spindle support allows for a smooth spindle motion and virtually error free measurements.
- Reduced measuring force
- The measuring force can be reduced to a minimum of 0.3 N in three selectable steps using the measuring balance (option). The force is maintained constant regardless of spindle movement direction.
- Soft spindle return. A braking mechanism reduces spindle return speed, thereby eliminating the danger of damaging either the surface plate or the workpiece.

---

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Measuring range</th>
<th>Measuring force</th>
<th>Resolution</th>
<th>Mass*</th>
</tr>
</thead>
<tbody>
<tr>
<td>DG110B</td>
<td>110 mm / 4.33”</td>
<td>0.5 N</td>
<td>0.5 µm</td>
<td></td>
</tr>
<tr>
<td>DG100B</td>
<td>100 mm / 3.94”</td>
<td>0.55 N</td>
<td>0.5 µm</td>
<td></td>
</tr>
<tr>
<td>DG155B</td>
<td>150 mm / 5.91”</td>
<td>±0.4 N</td>
<td>0.5 µm</td>
<td></td>
</tr>
<tr>
<td>DG205B</td>
<td>200 mm / 7.87”</td>
<td>±0.55 N</td>
<td>0.5 µm</td>
<td></td>
</tr>
</tbody>
</table>

*Digital gauge stand DG501 and Measuring force balancer DZ-541 are options.

---

### Dimensions

#### DG110B

- Measurement range: 110 mm / 4.33”
- Measuring force: 0.5 N
- Resolution: 0.5 µm
- Mass*: 1.388 lbs

#### DG100B

- Measurement range: 100 mm / 3.94”
- Measuring force: 0.55 N
- Resolution: 0.5 µm
- Mass*: 2.866 lbs

#### DG155B

- Measurement range: 155 mm / 6.1”
- Measuring force: ±0.4 N
- Resolution: 0.5 µm
- Mass*: 2.54 lbs

#### DG205B

- Measurement range: 205 mm / 8.07”
- Measuring force: ±0.55 N
- Resolution: 0.5 µm
- Mass*: 4.33 lbs

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### Accessories for Gauges

- Lift lever DZ-161 (option)
- Approx. 1150 g / 2.54 lbs
- Approx. 1300 g / 2.866 lbs
- Y-gaskets
- Oil sealing, O-rings
- Y-gaskets
- Feeler tipped with ø 2.5 mm / 0.098” dia.
- Carbide ball with M2.5p x 0.45 screw on fitting end (DZ-121)

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**For Counter, A/B quadrature signal output type (See Page 26)**

- Maximum Response speed: 1 m/s
- Operating temperature: 0 °C to 50 °C / 32 °F to 122 °F
- Storage temperature: -10 °C to 60 °C / 14 °F to 140 °F
# DG-M/E Type

## Outputs

<table>
<thead>
<tr>
<th>Display connection type</th>
<th>A/B quadrature output type</th>
<th>Power supply output type</th>
<th>Power supply output (11 \text{ to } 28\text{V})</th>
<th>Power supply output (11 \text{ to } 28\text{V})</th>
</tr>
</thead>
<tbody>
<tr>
<td>DG-M/E - M</td>
<td>A/B quadrature to direct AB quadrature output</td>
<td>110 V (Corresponding to direct AB quadrature output)</td>
<td>110 V (Corresponding to direct AB quadrature output)</td>
<td></td>
</tr>
</tbody>
</table>

### Specifications

- **Power supply voltage**
  - 24 V DC (Corresponding to direct AB quadrature output)

<table>
<thead>
<tr>
<th>Input voltage</th>
<th>A/B quadrature signal</th>
<th>Minimum phase difference</th>
<th>Alarm</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 V DC</td>
<td>A/B quadrature to direct AB quadrature output</td>
<td>0° to 90° (Corresponding to direct AB quadrature output)</td>
<td>0° to 90° (Corresponding to direct AB quadrature output)</td>
</tr>
</tbody>
</table>

### Dimensions

- **Display connection type**
  - Unit: mm
- **A/B quadrature output type**
  - Unit: mm

<table>
<thead>
<tr>
<th>Display connection type</th>
<th>A/B quadrature output type</th>
<th>Unit: mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length: 263.1 (11.17)</td>
<td>Diameter: 16.8 (0.66)</td>
<td></td>
</tr>
</tbody>
</table>

### Notes

- For A/B quadrature output type, use the DZ51 in combination with the MT10 detector.

## Accessories

### For DG-M/E series

- **DG-21** (Relay adapter) For connections of DG-1, DG-91, DG-9 and DG1/2/3 to LC, LH and LY displays

### DG-301 Digital gauging stand (for DG1/2, DG102, DG-302)

- **DG10/20/30 Air lifter (for DG series, DG1/2 to DG5/6)**

### DG-122 Feeler (for DG1/2 to DG5/6)

### DG-101 Roller lifter (for DG1/2, DG102, DG5/6; except for DG1/2/3)

### DG-Z/5: Magnetic contact point Feeler (for DG1/2/3, DG5/6)

- Contact point: 2.5 mm (0.098") stainless steel tip (mounting screw: M2.5 x 0.45)

### DG-Z/5: Magnetic contact point Feeler (for DG1/2/3, DG5/6)

- Contact point: 2.5 mm (0.098") stainless steel tip (mounting screw: M2.5 x 0.45)

- **DG-Z/5** (Relay adapter) For connections of DG-1, DG-91, DG-9 and DG1/2/3 to LC, LH and LY displays

### DG-Z/5: Magnetic contact point Feeler (for DG1/2/3, DG5/6)

- Contact point: 2.5 mm (0.098") stainless steel tip (mounting screw: M2.5 x 0.45)

### DG-Z/5: Magnetic contact point Feeler (for DG1/2/3, DG5/6)

- Contact point: 2.5 mm (0.098") stainless steel tip (mounting screw: M2.5 x 0.45)
**Memo**

**DZ-821 Air lifter (for DZ805, 810, 83, 84, 85)**
- Connector: two
- Cylinder: 20mm

**DZ-911 UI lever (for DG-B except DG-BP068P; standard accessory for the DG110B)**
- Unit: mm

**DZ-831 Digital gauge stand (for DK110, DG110B)**
- Surface plate material: gabbro
- Surface plate flatness: 3 µm
- Surface plate size: 350mm (13.78'') x 350mm (13.78'')
- Maximum workpiece height: approx. 330mm (12.99'')
- Mass: 38kg (83.8 lbs)

**DZ-981 Measuring force balance (for DK110, DG110B)**
- Unit: mm

**DZ-S100 Feeder set**
- Plastic ball contact point: ø 3mm nylon ball
- Flat inside contact point
- Offset center contact point: ø 1mm steel ball
- Pin contact point

**SZ70-1 Adapter**
- SZ70-1 is required for connecting the following scale units and counters:
  - Gauge unit: DG-805 Series, DG-80 Series
  - Counter: L71A, L71B, L71Y, and L72Y
- Adapter DZ70-2 is also required.

*Please refer to p54 for the details of the screw.*
DT512N/P
Compact and slim gauges with 1µm resolution

- Excellent resistance to workshop conditions (DT512P: IP64)
- Resistant to oil, water, dust, vibration, and shock.
- Accuracy: 6 µm
- Resolution: 1 µm
- Measuring range: 12 mm / 0.47" (D x W x L)
- Compact size ideal for designing into machines

Dimensions

<table>
<thead>
<tr>
<th>Specifications</th>
<th>DT512N</th>
<th>DT512P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>12 mm / 0.47&quot;</td>
<td>12 mm / 0.47&quot;</td>
</tr>
<tr>
<td>Accuracy at 20°C / 68°F</td>
<td>±0.006 mm / 0.00025&quot;</td>
<td>±0.005 mm / 0.00020&quot;</td>
</tr>
<tr>
<td>Measuring Force</td>
<td>0.5 N ±0.8 N</td>
<td>0.5 N ±0.8 N</td>
</tr>
<tr>
<td>Resolution</td>
<td>5 µm</td>
<td>5 µm</td>
</tr>
<tr>
<td>Accuracy (at 20°C / 68°F)</td>
<td>6 µm</td>
<td>10 µm</td>
</tr>
<tr>
<td>Spindle Actuation</td>
<td>DT12P DT32N DT32PV</td>
<td>DT12P DT32N DT32PV</td>
</tr>
<tr>
<td>Dimensions and dimensional tolerance</td>
<td>As per astronomical laws</td>
<td>As per astronomical laws</td>
</tr>
</tbody>
</table>

Specifications

- Excellent resistance to workshop conditions
- Resistant to oil, water, dust, vibration, and shock.
- Accuracy: 10 m
- Resolution: 5 m
- Measuring range: 12mm/0.47", 30mm/1.18"
- Compact size ideal for designing into machines
- DT512 : 12(D) x 35(W) x 116(H)mm/ 0.47" x 1.38" x 4.57"
- DT512 : 12(D) x 35(W) x 218(H)mm/ 0.47" x 1.38" x 8.58"
- Pneumatic push type are also available
- Guaranteed number of strokes : 5 million
- Main applications : Automatic sorting of parts

Digital Gauge

Specifications

- Excellent resistance to workshop conditions
- Resistant to oil, water, dust, vibration, and shock.
- Accuracy: 10 m
- Resolution: 5 m
- Measuring range: 12mm/0.47", 30mm/1.18"
- Compact size ideal for designing into machines
- DT512 : 12(D) x 35(W) x 116(H)mm/ 0.47" x 1.38" x 4.57"
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Digital Gauge

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- Excellent resistance to workshop conditions
- Resistant to oil, water, dust, vibration, and shock.
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- Resolution: 5 m
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Dimensions

- Excellent resistance to workshop conditions
- Resistant to oil, water, dust, vibration, and shock.
- Accuracy: 10 m
- Resolution: 5 m
- Measuring range: 12mm/0.47", 30mm/1.18"
- Compact size ideal for designing into machines
- DT512 : 12(D) x 35(W) x 116(H)mm/ 0.47" x 1.38" x 4.57"
- DT512 : 12(D) x 35(W) x 218(H)mm/ 0.47" x 1.38" x 8.58"
- Pneumatic push type are also available
- Guaranteed number of strokes : 5 million
- Main applications : Automatic sorting of parts

Digital Gauge

Specifications

- Excellent resistance to workshop conditions
- Resistant to oil, water, dust, vibration, and shock.
- Accuracy: 10 m
- Resolution: 5 m
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- Guaranteed number of strokes : 5 million
- Main applications : Automatic sorting of parts

Dimensions
Accessories (for DT series)

- **DZ-176 Air lifter (for DT)**
  - Measuring range: 0 to 12 mm
  - Can be used for DT12/13/14
  - Air pressure: 200 to 700 kPa (2,028 to 69,206 kN/m²)
  - Ambient temperature: 0 to 60°C
  - Motor: 4.8 mm (rpm: speed controlled)
  - Supply voltage: 5 V (incl. speed controller)
  - Supplied accessories: Mounting jig, speed controller (SMC: AS1211F-M5-04)

- **DZ-191 Coupling**

- **DZ100 Roller tool (for DT series, DQ-S series except for DG15BP/20BP)**

Other accessories

- CE: 06 Extension cable: DQ10B-D1 (1m), DQ10B-D3 (2.5m), DQ10B-D5 (3m), DQ10B-D10 (5m)
- On-T extension cable (Air tool): On-TU-1 (1m), On-TU-2 (3m), On-TU-5 (5m), On-TU-10 (10m)
- DK: T10/T105 (Aligning pin): T105 (1m), T1105 (5m)

Specifications

**MT12/13/14**
- For connection to counter
- Unterminated cable
- A/B quadrature output by line driver (EIA-422 compliance)
- Power supply: +5 V DC

- Dimensions

**MT12/13**
- Measuring unit connector
- Cable length: 300/11.81”

**MT14**
- Measuring unit connector
- Cable length: 80/3.15”

*Please refer to p32 for the details of the screws.*
**DL-B**

Slim, compact gauges

- Magnetic principle
- Excellent resistance to workshop conditions (DL310B: IP64)
- Resistant to dust and vibrations
- Compact size ideal for designing into machines.
- A&B phase output by open collector
- Measuring range: 10 mm / 0.39" and 30 mm / 1.18"

---

**Digital Gauge**

**Dimensions**

**DL310B**

- Cable length: 2000/78.74

**DL31B**

- Cable length: 2000/78.74

**Specifications**

- Measuring range:
  - 10 mm / 0.39" to 45 mm / 1.77"
- Accuracy (±2% of 30 mm / 1.18")
- Resolution: 0.1 mm / 0.004"
- Accuracy (%)
  - Measured as 10 mm / 0.39" to 45 mm / 1.77"
- Measuring force: 1.5 N or less

**Accessories**

- **DZ51 (Relay adapter)** For connections of DG-9, DL-9R, DL-9 and D13/33BN/PI to LG, LH and LY displays

- **DZ-411 Bushing (for mounting a U40A or a DE39R to a DZ-401 stand)**

- **DZ173 Air release (for DE12BR/32BR, U Series)**

- **DZ101 Bellows set (for DL330B, DE330BR)**

- **DZ191 Coupling**

- **SZ70-1 Adapter**

---

**Measuring range**

- Measured range: 10 mm / 0.39" to 45 mm / 1.77"
- Accuracy: ±2% of 30 mm / 1.18"
- Resolution: 0.1 mm / 0.004"
- Measuring force: 1.5 N or less

---

**Features**

- With the extension spindle attached, the spindle is extended by 25 mm and the measuring force increases by about 0.3 N.
- Excellent resistance to workshop conditions (DL310B: IP64).
- Magnetic principle

---

**Specifications**

- Measuring range: 10 mm / 0.39" to 45 mm / 1.77"
- Accuracy: ±2% of 30 mm / 1.18"
- Resolution: 0.1 mm / 0.004"
- Accuracy (%)
  - Measured as 10 mm / 0.39" to 45 mm / 1.77"
- Measuring force: 1.5 N or less
**U Series**

Easy to operate, high-accuracy digital indicator available in a wide measuring range.

- High accuracy: 2 m (U12B/30B) 3 m (U30B)
- High resolution: 1 m
- Measuring range: 0 to 60 mm / 0 to 2.36
- Connectable to a personal computer through RS-232C interface.
- Peak hold for measuring max./min./peak-to-peak values
- The spindle contains a damper mechanism to protect measured objects from damage (U30B/ U60B).
- Inch/ metric display

---

**Digital Indicators**

<table>
<thead>
<tr>
<th>Model</th>
<th>U2B</th>
<th>U30B</th>
<th>U60B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>AC 100V 50/60Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage temperature/humidity</td>
<td>0 ˚C to 40 ˚C / 32 ˚F to 104 ˚F (non condensing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating temperature/humidity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>6-digit LCD display</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy (at 20 ˚C /68 ˚F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring force</td>
<td>2.2 N or less</td>
<td></td>
<td></td>
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<tr>
<td>Measuring range</td>
<td>30 mm / 1.18&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel length of the release</td>
<td>Full stroke</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full stroke</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring range</td>
<td>60 mm / 2.36&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum response speed</td>
<td>24 m / min</td>
<td></td>
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</tr>
<tr>
<td>Output signal</td>
<td>RS-232C (2400 bps)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mounting stem diameter</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Selectable values</td>
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<td></td>
<td></td>
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<tr>
<td>By key operation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit: mm</td>
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<tr>
<td>Unit: inch</td>
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<td></td>
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</tr>
<tr>
<td>Model</td>
<td>U60B/U30B/U12B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mass</td>
<td>Approx. 396 g / 13.95 oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mass</td>
<td></td>
<td>Approx. 320 g / 11.24 oz</td>
<td></td>
</tr>
<tr>
<td>Mass</td>
<td></td>
<td></td>
<td>Approx. 260 g / 9.16 oz</td>
</tr>
</tbody>
</table>

---

**Accessories**

(for U series)

- **DZ 21 Gauging stand** (for DZ 30B SL/810B 810B 810B, U Series, U612B R)
- **DZ 173 Air release** (for DZ 12B R/30B BL, U Series)

---

**Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>U12B</th>
<th>U30B</th>
<th>U60B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>AC 100V 50/60Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring range</td>
<td>30 mm / 1.18&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring range</td>
<td>60 mm / 2.36&quot;</td>
<td>0–0.0006&quot;</td>
<td>3.8 mm (U60B)</td>
</tr>
<tr>
<td>Measuring range</td>
<td>60 mm / 2.36&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring range</td>
<td>60 mm / 2.36&quot;</td>
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<td>60 mm / 2.36&quot;</td>
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<td>60 mm / 2.36&quot;</td>
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<td></td>
</tr>
<tr>
<td>Measuring range</td>
<td>60 mm / 2.36&quot;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**DZ 5100 Feeler set**

- Plastic ball contact point: ø 3mm nylon ball
- Flat center contact point: ø 0.31" (0.79mm)
- Pin contact point:

---

**Other accessories**

- Cable connectors for computer connection (for U Series/ LT Series/ LY Series) - DZ 252 (round 8 pin/ D sub 9 pin) (2 m) - DZ 253A (round 8 pin/ D sub 25 pin) (2 m)
- Extension cable (for DZ 252N/P, DZ 253N/P, DZ 254N/P) - CE 08-1 (1m), CE 08-3 (3m), CE 08-5 (5m), CE 08-10 (10m), CE 08-15 (15m)

---

*Please refer to the manual for the details of the same.*
Interface unit

Memo


The "MG" series is a modular gauging system that allows flexible, multi-point measuring, with built-in software for today's most popular output protocols. The "MG" system can be easily mounted to a standard DIN rail (35mm), requires minimal wiring, and can be easily expanded for future upgrades.

Conventional systems require one BCD cable per gauge set. The MG series, however, only requires one BCD cable. In addition, the MG series is connectable to our DK, DG, DT, and DL series gauges.
LT30 SERIES (for DK series)

Counter compatible with our compact, high-precision DK series of digital gauges.

- Minimum display resolution: 0.1 m
- Zero point detection
- BCD and RS-232C I/O models are available.
- Compact and lightweight; DIN standard size (72 mm x H 72 mm)
- Comparator
- Reset/Preset
- Alarm for overloaded max. response speed and disconnected measuring unit
- Setting value storage
- 2-axes ADD/SUB (2-axes model only)

System structure

- Input/output PINS
  - Input: Reset, Peak-hold start, Peak-hold pause, RS trigger (RS-232C models only)
  - Output: Result evaluation, mode selection, and output, key lock and release.

Note 1: I/O connector

DK series

- Approx. 230 g
- Approx. 200 g

- 5 W
- 8.5 W

- C
- 10 to 50

- Storage temperature: ˃10 to 50

- Operating temperature: 0 to 40

Power consumption: *5

Mass

Power voltage

Compatible measuring unit

³

Unit: mm

Dimensions (LT30-2GB)

Common Specifications

<table>
<thead>
<tr>
<th>Function</th>
<th>LT30 YG</th>
<th>YGB</th>
<th>YG</th>
<th>YGB</th>
<th>YG</th>
<th>YGB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reset function</td>
<td>Reset key or optional I/O connectors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preset function</td>
<td>Set value can be set by pressing key, reset key to cancel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comparison function</td>
<td>Up to 4 values can be set for setting and up to 16 value set together with BCD terminal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak hold function</td>
<td>Set with RS-232C</td>
<td></td>
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<tr>
<td>Alarm function</td>
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</tr>
<tr>
<td>Data storage</td>
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<tr>
<td>Power supply</td>
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<td>MEASUREMENTS</td>
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<tr>
<td>Max. measurement</td>
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<tr>
<td>Measurement range</td>
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</tr>
<tr>
<td>Resolution</td>
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<td></td>
</tr>
<tr>
<td>Accuracy</td>
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<td></td>
<td></td>
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<tr>
<td>Notes</td>
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</tbody>
</table>

LT30A SERIES (for DG, DL)

Compact, lightweight, and easy-to-mount counter

- Compact design: DIN standard size (72 mm x 72 mm / 2.83” x 2.83” W x H)
- Suitable for panel mounting
- Selectable display resolutions: 0.5/1/5/10 µm
- BCD and RS-232C V/O models are available.
- Reset/preset
- Peak hold function for measuring max./min., peak-to-peak values and GO/NO I/O evaluation.
- ADD/SUB function (2-axis model only)
- Data storage: resolution, counting direction, comparator reference points, preset value, mode, BCD sign (B type), communication parameters (C type)
- Inch/metric display
- Applications: automatic sorting and measuring of parts on production lines.

Common Specifications

<table>
<thead>
<tr>
<th>Function</th>
<th>LT30A/K43/K50/K61/K72/K74/K4E/K61/K6D/K65/K73</th>
<th>LT20A/K2C/K54/K33/K30/K2D/K31/K47/K43/K2F/K32/K47/K43/K29</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reset function</td>
<td>Reset key or optional I/O connectors</td>
<td></td>
</tr>
<tr>
<td>Preset function</td>
<td>Set value can be set by pressing key,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>set value can be set by RS-232C</td>
<td></td>
</tr>
<tr>
<td>Comparator function</td>
<td>Set with RS-232C</td>
<td></td>
</tr>
<tr>
<td>Peak hold function</td>
<td>Set with RS-232C</td>
<td></td>
</tr>
<tr>
<td>Alarm function</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data storage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEASUREMENTS</td>
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<td></td>
</tr>
<tr>
<td>Max. measurement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measurement range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td></td>
<td></td>
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<tr>
<td>Accuracy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:

1. RS-232C input/output is possible (BCD signal input/output excluded). RS trigger (RS-232C models only)
2. RS-232C I/O connections are available (with optional accessory I/O board). RS trigger (RS-232C models only)
3. RS-232C I/O connections are available (with optional accessory I/O board). RS trigger (RS-232C models only)
4. RS-232C I/O connections are available (with optional accessory I/O board). RS trigger (RS-232C models only)
5. RS-232C I/O connections are available (with optional accessory I/O board). RS trigger (RS-232C models only)

Dimensions

Unit: mm

<Panel cut dimensions>

LT30 SERIES (for DK series)

Counter unit

Dimensions

Unit: mm

<Panel cut dimensions>

LT20A SERIES (for DG, DL)

Counter unit
<table>
<thead>
<tr>
<th>Specifications</th>
<th>LT11A SERIES (for DT512)</th>
<th>LT10A SERIES (for DT12/32)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power input connector (3 pins)</td>
<td>DC9.0 to 26.4 V.</td>
<td>DC9.0 to 26.4 V.</td>
</tr>
<tr>
<td>Resolution</td>
<td>1 channel</td>
<td>1 channel</td>
</tr>
<tr>
<td>Current values, maximum, minimum, peak-to-peak values and GO/NO GO evaluation included as standard functions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADD/SUB function (2-channel model)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full lineup for various applications</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dimensions**

<table>
<thead>
<tr>
<th></th>
<th>LT11A SERIES (for DT512)</th>
<th>LT10A SERIES (for DT12/32)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counter unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Common Specifications**

<table>
<thead>
<tr>
<th>Specifications</th>
<th>LT11A SERIES (for DT512)</th>
<th>LT10A SERIES (for DT12/32)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>2.9 W</td>
<td>1.8 W</td>
</tr>
<tr>
<td>Storage temperature:</td>
<td>≤70°C (158°F)</td>
<td>≤70°C (158°F)</td>
</tr>
<tr>
<td>BCD alarm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alarm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resolution, direction, comparator value, preset value, modes, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak hold function</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak hold function</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comparetor function</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comparator (key input).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switched with BCD terminal.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Converted to 100 m/min at 10°C using 80°C (250°F)</td>
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<td></td>
</tr>
<tr>
<td>Current values, maximum, minimum, peak-to-peak values and GO/NO GO evaluation included as standard functions.</td>
<td></td>
<td></td>
</tr>
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</table>

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<table>
<thead>
<tr>
<th>Dimensions</th>
<th>LT11A SERIES (for DT512)</th>
<th>LT10A SERIES (for DT12/32)</th>
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</thead>
<tbody>
<tr>
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<td>Dimensions</td>
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**Common Specifications**

<table>
<thead>
<tr>
<th>Specifications</th>
<th>LT11A SERIES (for DT512)</th>
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<tbody>
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<tr>
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<td></td>
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<tr>
<td>Resolution, direction, comparator value, preset value, modes, etc.</td>
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<td>Converted to 100 m/min at 10°C using 80°C (250°F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current values, maximum, minimum, peak-to-peak values and GO/NO GO evaluation included as standard functions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADD/SUB function (2-channel model)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full lineup for various applications</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dimensions**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>LT11A SERIES (for DT512)</th>
<th>LT10A SERIES (for DT12/32)</th>
</tr>
</thead>
</table>
LY71

For measurements and control in diverse fields.

The required output board can be extended.

- Various outputs are enabled by mounting extension boards - RS-232C Output (Option)
- Comparator Function: Relay / Open-collector (Option)
- Peak Hold Function Convenient for Statistical Measurement
- Convenient External Input Functions for Automatic Measurement
- Display Resolution Switching
- Data Storage
- Restart/Preset/Reset
- Detecting Reference Point of Measurement Unit
- Scaling
- Flicker Control

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>LY71</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>LY71</td>
</tr>
<tr>
<td>Power supply</td>
<td>DC 12 V, Rating 0.75 A, Max. 1 A, AC 100 V to 240 V</td>
</tr>
<tr>
<td>Measuring unit resolution</td>
<td>Linear compensation: 0.100000 to 9.999999</td>
</tr>
<tr>
<td>Data format</td>
<td>All axes on same line/new line for each axis</td>
</tr>
<tr>
<td>Display data</td>
<td>Measuring unit input resolution or higher and supported inch units</td>
</tr>
<tr>
<td>Resolution</td>
<td>Inch: Basic: 0.000005”, 0.00001”, 0.00005”, 0.0002”, 0.0005”</td>
</tr>
<tr>
<td>Transfer rate</td>
<td>38400/19200/9600/4800/2400/1200 bps</td>
</tr>
<tr>
<td>Analysis unit</td>
<td>µm/m (Expanded: ±1000µm/m)</td>
</tr>
<tr>
<td>Datum point operations</td>
<td>Moveable: ±100µm/m, 0.05µm/m, ±20µm/m, ±50µm/m, ±1 degree can be added.</td>
</tr>
<tr>
<td>Input signal</td>
<td>Measuring unit disconnected, Excess speed, Maximum display amount exceeded, Power failure, Error in stored data</td>
</tr>
<tr>
<td>Output data selection</td>
<td>Alarm display</td>
</tr>
<tr>
<td>Display</td>
<td>Measuring value, Power failure, Alarm control</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Unit: mm/inch</td>
</tr>
</tbody>
</table>

Dimensions

LY72

For measurements and control in diverse fields.

Multifunction counter with RS-232C interface

- RS-232C standard function
- Peak Hold Function Convenient for Statistical Measurement
- Convenient External Input Functions for Automatic Measurement
- Display Resolution Switching
- Data Storage
- Restart/Preset/Reset
- Detecting Reference Point of Measurement Unit
- Scaling
- Flicker Control

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>LY72</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>LY72</td>
</tr>
<tr>
<td>Power supply</td>
<td>DC 12 V, Rating 0.75 A, Max. 1 A, AC 100 V to 240 V</td>
</tr>
<tr>
<td>Measuring unit resolution</td>
<td>Linear compensation: 0.100000 to 9.999999</td>
</tr>
<tr>
<td>Data format</td>
<td>All axes on same line/new line for each axis</td>
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<td>Display data</td>
<td>Measuring unit input resolution or higher and supported inch units</td>
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<td>Resolution</td>
<td>Inch: Basic: 0.000005”, 0.00001”, 0.00005”, 0.0002”, 0.0005”</td>
</tr>
<tr>
<td>Transfer rate</td>
<td>38400/19200/9600/4800/2400/1200 bps</td>
</tr>
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<td>Measuring value, Power failure, Alarm control</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Unit: mm/inch</td>
</tr>
</tbody>
</table>

Dimensions
Technical information

LT Series Usage Note

I/O connector

The I/O connector on the rear panel of the counter unit has functions for Go/No Go output based on the comparator function, start input, pause input, RS-232C trigger input and reset input.

<Connector pin assignment (LT30,20A,11A,10A)>  

<table>
<thead>
<tr>
<th>Signal name</th>
<th>Pin No.</th>
<th>Definition</th>
<th>Signal</th>
<th>Pin No.</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power input connector</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grounding connector</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross section of the cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector used: MC1.5/3-ST-3.5 (provided) made by Phoenix Contact</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front of display unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power input connector</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grounding connector</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross section of the cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>Connector used: MC1.5/3-ST-3.5 (provided) made by Phoenix Contact</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Installing the display unit

When mounting in a panel:
1. Cut out an opening mass the dimensions shown (Fig.2).
2. Insert the display unit into the cut-out opening in the panel from the rear.
3. Attach the supplied installation brackets (upper / lower) from the rear.
4. Use fingers to tighten and secure.

Note: When attaching the installation brackets to the display unit, leave enough space (min. 30mm) between it and the panel.

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>

Electrical specifications

- Photocoupler output
  - Input: 10 to 20 mA
  - Output: 0 to 5 V

- Operating temperature
  - LT71-B: 0 to 40˚C (32 to 104˚F) (No condensation)
  - LT71-KR: -20 to 60˚C (-4 to 140˚F) (20 to 90 % RH, no condensation)

- Storage temperature
  - LT71-B: -20 to 80˚C (-4 to 176˚F) (No condensation)
  - LT71-KR: -40 to 80˚C (-40 to 176˚F) (No condensation)

Other accessories

- Cable connectors for computer connection (for U Series, LY Series): DZ259 round 8 pin → sub-9 pin (2 m) DZ259A round 8 pin → D sub-25 pin (2 m) DZ259 round 8 pin (unterminated end)
### Connection Cables

<table>
<thead>
<tr>
<th>Measuring unit</th>
<th>Adapter for LT series</th>
<th>LT series</th>
<th>Interface unit</th>
<th>Adapter for Counter</th>
<th>Connection cable</th>
<th>Counter unit</th>
<th>Interpolators</th>
<th>Extension cables</th>
</tr>
</thead>
<tbody>
<tr>
<td>DK95A/B, DK95A/B, DK95A/B</td>
<td>DL-B</td>
<td>LT30A</td>
<td>MG</td>
<td>MD15A/P1/PV (MD20-DL)</td>
<td>-01(1m), -03(3m), -05(5m), -10(10m)</td>
<td>MT13</td>
<td>MT13</td>
<td>S70.2-1, S70.3-1, S70.4-1</td>
</tr>
<tr>
<td>DK15/25</td>
<td>-</td>
<td>LT30</td>
<td>MG</td>
<td>MD15A/P1/PV (MD20-DL)</td>
<td>-01(1m), -03(3m), -05(5m), -10(10m)</td>
<td>MT13</td>
<td>MT13</td>
<td>S70.2-1, S70.3-1, S70.4-1</td>
</tr>
<tr>
<td>DK50/100</td>
<td>DL-B</td>
<td>LT30A</td>
<td>MG</td>
<td>MD15A/P1/PV (MD20-DL)</td>
<td>-01(1m), -03(3m), -05(5m), -10(10m)</td>
<td>MT13</td>
<td>MT13</td>
<td>S70.2-1, S70.3-1, S70.4-1</td>
</tr>
<tr>
<td>DK50/100/150/205B</td>
<td>DL-B</td>
<td>LT30A</td>
<td>MG</td>
<td>MD15A/P1/PV (MD20-DL)</td>
<td>-01(1m), -03(3m), -05(5m), -10(10m)</td>
<td>MT13</td>
<td>MT13</td>
<td>S70.2-1, S70.3-1, S70.4-1</td>
</tr>
<tr>
<td>DK10/25</td>
<td>DL-B</td>
<td>LT30A</td>
<td>MG</td>
<td>MD15A/P1/PV (MD20-DL)</td>
<td>-01(1m), -03(3m), -05(5m), -10(10m)</td>
<td>MT13</td>
<td>MT13</td>
<td>S70.2-1, S70.3-1, S70.4-1</td>
</tr>
<tr>
<td>DT12/P</td>
<td>DL-B</td>
<td>LT30A</td>
<td>MG</td>
<td>MD15A/P1/PV (MD20-DL)</td>
<td>-01(1m), -03(3m), -05(5m), -10(10m)</td>
<td>MT13</td>
<td>MT13</td>
<td>S70.2-1, S70.3-1, S70.4-1</td>
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<tr>
<td>DT12/P</td>
<td>DL-B</td>
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</tr>
</tbody>
</table>

### Compatible

<table>
<thead>
<tr>
<th>Measuring unit</th>
<th>Adapter for LT series</th>
<th>LT series</th>
<th>Adapter for Counter</th>
<th>Connection cable</th>
<th>Counter unit</th>
<th>Interpolators</th>
<th>Extension cables</th>
</tr>
</thead>
<tbody>
<tr>
<td>DT32/P/P/P-P/P</td>
<td>Interpolator MT12</td>
<td>LT30</td>
<td>MT12</td>
<td>-01(1m), -03(3m), -05(5m), -10(10m)</td>
<td>MT13</td>
<td>MT13</td>
<td>S70.2-1, S70.3-1, S70.4-1</td>
</tr>
<tr>
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<td>Interpolator MT12</td>
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<td>DT32/P/P/P-P/P</td>
<td>Interpolator MT12</td>
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<tr>
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</tr>
</tbody>
</table>
A description of external form chart of the screw

• When a screw thread is not mentioned in the Dimensions, it is mean numerical value base on standard pitch (National Coarse).
• The screw which conformed to ISO and JIS is enclosed.

Safety

No compromise for high-accuracy products

The total quality control system that operates throughout the entire design and production process ensures products with enhanced safety, high quality, and high reliability that match our customers’ requirements. The company is certified for length calibration in compliance with the traceability system required by the “Weights and Measures Act,” and has been granted ISO 9001 certification, which is the international standard for quality assurance.

Our products comply with CE Marking requirements, have acquired UL certifications and meet other regulations, ensuring safe use worldwide.

We have met:

• EMC Directives (CE)
  EMI: EN 55011 Group 1 Class A / 91
  EMS: EN 61000-6-2

• FCC regulation
  FCC Part 15 Subpart B Class A
  for Products with built-in AC power supply:
  • UL 61010-1
  for Products with Laser:
  • DHHS Class 1 (21CFR1040.10)

• Standards or regulations to be complied with vary by product.

Support

Sony Manufacturing Systems Corporation Covers the World

Europe

Sony Manufacturing Systems Europe
Stuttgart Office
Hedelfinger Strasse 61, D-70527 Stuttgart, Germany
Tel: +49-711-6858-777 Fax: +49-711-580-715
http://www.sonymanufacturing.com

Asia

Sony Taiwan Limited
Manufacturing Systems Marketing Taiwan Headquarters
7F 145, Changshu Road, Taipei, 104 Taiwan
Tel: +886-2-2322-3815 +886-2-2293-3988

Sony Manufacturing Systems Asia
7F 145, Changshu Road, Taipei, 104 Taiwan
Tel: +886-2-2389-2079 Fax: +886-2-2389-1121
http://www.sony.com/tw/company/MST_index.aspx

North America

Sony Manufacturing Systems America, Inc.
20381 Hermana Circle, Lake Forest, CA, 92630
Tel: +1-949-770-8400 Fax: +1-949-770-8408
http://www.sonypt.com

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