MT220 Series of Digital Manometers

±0.02% Accuracy

- For Truly Efficient Field Calibration -

MT 220

- High accuracy: ±0.02% of reading, with a maximum allowable input of 500 kPa (130 kPa-range model)
  - Measurement with DCV and DCA
  - 24 V DC output
- Percent reading
- Error reading
- Measurement data memory
- D/A conversion output, comparator output, and external trigger input (optional)
- GP-IB or RS-232 interfaces
- 12 V DC power supply
- Battery operation (optional)

The de facto standard of field calibrators for pressure and differential pressure transmitters

www.yokogawa.com/tm/ and subscribe to “Newsawave,” our free e-mail newsletter
The de Facto Standard of Field Calibrators for Pressure and Differential Pressure Transmitters

High-Performance, High-Efficiency Field Calibration
In electric power, gas, nuclear power, oil refinery, petrochemical and pharmaceutical plants, numerous sensors are used to measure such variables as pressure, temperature and flow rate, and to automate the process. These sensors must be calibrated periodically to maintain their accuracy. However, because meters are typically so many pressure/differential pressure transmitters out in the field, the transmitters are usually calibrated in-situ. This calibration accounts for much of plant maintenance work. Efficiency is therefore crucial to maintain uptime of equipment and facilities.

The MT220 is a precision digital manometer for use with pressure/differential pressure transmitters and is designed to maximize the efficiency of field calibration work.

Functions Tailored to Your Calibration Work
Calibration involves imparting the same pressure level to both a calibrator and a transmitter and comparing the transmitter output with a value measured by the calibrator. The MT220 comes with all the functions you need for such calibration work in the plant or field. Practical functions include measuring transmitter output (1.5 V or 4-20 mA), outputting 24 V DC for driving the transmitter, and indicating the transmitter output error as a percent value. The MT220 even has a pressure range pre-adjusted to that of transmitters.

Assured Compatibility with Earlier Models
The specifications of the MT220 are based on the earlier series of MT120 manometers to ensure compatibility; both series also share the same communications commands.

Years of Experience in Precision Pressure Measuring Instruments
Yokogawa, a leading company with a proven track record in the field of industrial instruments and instrumentation, also has decades of experience in pressure measurement. We’ve been developing digital manometers for more than 20 years and have won a great many loyal customers. Our wide range of pressure measuring instruments offer unrivalled functionality and performance.

Full Support for Higher Accuracy of Pressure/Differential Pressure Transmitters
The accuracy of pressure/differential pressure transmitters has continued to improve, from ±0.25% to ±0.1%, and now to ±0.075%. That means the accuracy and stability of the manometers used to calibrate these transmitters must keep pace.

The MT220 employs Yokogawa’s original silicon resonant sensor—a high precision pressure sensing device. We’ve also set up an advanced calibration environment, including a tightly-controlled traceability system. As a result, our calibrators feature basic accuracy as high as ±0.02%, and excellent stability. With the MT220, you can verify the performance of even the most accurate of pressure/differential pressure transmitters, i.e. ±0.075%.

Other Major Functions
Many other functions help you implement your specific applications successfully.

Front Panel
- Pressure unit selector key
- Comparator output LED indicator (optional)
- Percent input readout keys
- Error readout key (%ERROR function)
- Parameter setting keys
- Data storage keys
- DCV/DCA functions keys
- Zero calibration key
- Trigger key
- DC power supply input terminal
- AC power supply input terminal
- Trigger key

Rear Panel
- Communication interface
- AC power supply input terminal
- Output terminal (optional)
- Trigger key
- Power switch
- Data storage key
- DCV/DCA measurement terminals
- Data hold key
- Trigger key
- Power line switch
- LCD for 5.5-digit readings (pressure measurement) and 4.5-digit readings (measurement with DCV and DCA functions), respectively.
- LCD backlighting: Present on the Model 767355.
- Relative key
- Zero calibration key
- Trigger key
- AC power supply input terminal
- Power line switch
- DCV/DCA measurement terminals
- Data storage key
- Trigger key
- Data storage key
- Trigger key

The MT220 is the de Facto Standard of Field Calibrators for Pressure and Differential Pressure Transmitters.
High-Performance Products Built on Sound Technology

**Automation of Pressure Measurement**

**D/A Conversion Output (Optional)**
Outputs a D/A-converted signal through the external terminal. This feature lets you easily send measurement data to a measuring system or a recorder.

![Example of D/A Conversion Output Waveform](image)

**Comparator Output and External Trigger Input (Optional)**
The comparator output provides the result of comparing an input level with preset upper and lower limits through the external terminal. You can also apply a start-of-measurement trigger using the rising edge of an external trigger signal supplied through the external trigger input. These features help automate your production/inspection lines of pressure-related products.

**GP-IB (or RS-232) Interface—Choose When Ordering**
This feature lets you read measured values into your PC or set measurement conditions from the PC. Communication is still possible even when the MT210/210F series are operated on batteries or the DC power source.

**Yokogawa Traceability System for Ensuring Top Reliability of Pressure measurement by customers**
Yokogawa has established traceability to both Japanese and US national standards for pressure measurement. Thus, the company is committed to controlling and maintaining the accuracy of standards installed in the standards room of its Kofu plant.

<table>
<thead>
<tr>
<th>Traceability System Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>US national standards</strong></td>
</tr>
<tr>
<td>NIST*</td>
</tr>
<tr>
<td><strong>Japanese national standards</strong></td>
</tr>
<tr>
<td>National Institute of Advanced Industrial Science and Technology</td>
</tr>
<tr>
<td>Geographical Survey Institute</td>
</tr>
</tbody>
</table>

- Reference standards
- Pressure balances (Dead-weight pressure gauge)
- Reference weights
- Calibration standards
- Working Standards (Digital manometers)
- Products: MT220

NIST : National Institute of Standards and Technology

Standards room under stringent control within the Kofu plant of Yokogawa
Field Calibration of Pressure/Differential Pressure Transmitters

The MT220 can measure pressure with outstanding accuracy, high resolution, minimal tempco, and excellent stability. It offers a wealth of functions for field calibration, including transmitter output measurement (DCV/DCA functions), 24-V DC output, percent error readout, measurement data memory, and Ni-Cd battery operation. The D/A conversion output makes it simple to output data to a recorder or other equipment. And of course, data output through a GP-IB or RS-232 interface is also possible—including data output during operation on a 12 V DC power supply or Ni-Cd batteries.

Calibration System Configuration Using a Combination of MT220 and Standard Pressure Source

Calibrating transmitters, pressure sensors and manometers is easy. Simply combine the MT220 with a standard pressure source (e.g., MC100 series) or a handheld pump (e.g., Model BA-11). You can also automate your calibration system by integrating your PC and relevant equipment with the system, making it ideal for a calibration laboratory, for example.

Major Users of Yokogawa Digital Manometers (for Reference Only)

National standards institutions in Japan and abroad; institutions related to nuclear power generation; national and public research institutions; electric-power companies; automakers and their affiliates; electric home appliances manufacturers; precision instruments manufacturers; semiconductor and electronic components manufacturers; pharmaceutical manufacturers; heavy electrical machinery builders; oil refinery companies and chemical and petrochemical companies; and engineering companies.
Technical Data

I Pressure-Measurement Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Pressure type</th>
<th>Gauge</th>
<th>Measurement range (with guaranteed accuracy)</th>
<th>Readout range</th>
<th>Accuracy six months after calibration (Tested at 23°C, after zero calibration)</th>
<th>Measurement accuracy one year after calibration (Tested at 23°C, after zero calibration)</th>
</tr>
</thead>
<tbody>
<tr>
<td>767351</td>
<td>Positive pressure: 0 to 10 kPa Negative pressure: -10 to 0 kPa</td>
<td>-12,0000 to 12,0000 kPa</td>
<td>Positive pressure: ±(0.01% of reading +0.15% of full scale) Negative pressure: ±(0.2% of reading +0.1% of full scale)</td>
<td>±(0.01% of full scale)</td>
<td>±(0.005% of full scale)</td>
<td>±(0.01% of full scale)</td>
</tr>
<tr>
<td>767353</td>
<td>Positive pressure: 0 to 130 kPa Negative pressure: -80 to 0 kPa</td>
<td>Up to 156,000 kPa</td>
<td>Positive pressure: ±(0.01% of reading +0.005% of full scale) Negative pressure: ±(0.2% of reading +0.1% of full scale)</td>
<td>±(0.01% of full scale)</td>
<td>±(0.005% of full scale)</td>
<td>±(0.01% of full scale)</td>
</tr>
<tr>
<td>767356</td>
<td>Positive pressure: 0 to 700 kPa Negative pressure: -80 to 0 kPa</td>
<td>Up to 840,000 kPa</td>
<td>Positive pressure: ±(0.01% of reading +0.005% of full scale) Negative pressure: ±(0.2% of reading +0.1% of full scale)</td>
<td>±(0.01% of full scale)</td>
<td>±(0.005% of full scale)</td>
<td>±(0.01% of full scale)</td>
</tr>
<tr>
<td>767357</td>
<td>Positive pressure: 0 to 3000 kPa Negative pressure: -80 to 0 kPa</td>
<td>Up to 3600,000 kPa</td>
<td>Positive pressure: ±(0.01% of reading +0.005% of full scale) Negative pressure: ±(0.2% of reading +0.1% of full scale)</td>
<td>±(0.01% of full scale)</td>
<td>±(0.005% of full scale)</td>
<td>±(0.01% of full scale)</td>
</tr>
</tbody>
</table>

Technical Data

I Reference Information

Yokogawa’s Original Silicon Resonant Sensor (Winner of the Ohkochi Grand Technology Prize and the Chairman’s Award of the Japan Federation of Economic Organizations (Keidanren))

Thanks to Yokogawa’s award-winning sensor, the MT220 boasts a basic accuracy as high as ±0.02%, and high resolution. The silicon resonant sensor is also practically immune to external effects such as temperature variations.

I Pressure Unit Conversion Table

<table>
<thead>
<tr>
<th>Pa</th>
<th>bar</th>
<th>kgf/cm²</th>
<th>atm</th>
<th>mmH₂O or mmH₂O</th>
<th>mmHg or Torr</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 x 10⁶</td>
<td>1 x 10⁶</td>
<td>1.019 72 x 10⁻³</td>
<td>9.869 23 x 10⁻⁶</td>
<td>1.019 72 x 10⁻⁴</td>
<td>7.500 62 x 10⁻⁷</td>
</tr>
<tr>
<td>9.806 65 x 10⁴</td>
<td>9.806 65 x 10⁻¹</td>
<td>1</td>
<td>9.686 23 x 10⁻⁴</td>
<td>1.019 72 x 10⁻²</td>
<td>7.500 62 x 10⁻⁵</td>
</tr>
<tr>
<td>1.013 25 x 10⁴</td>
<td>1.013 25</td>
<td>1.019 72</td>
<td>9.686 23 x 10⁻⁴</td>
<td>1.019 72 x 10⁻²</td>
<td>7.500 62 x 10⁻⁵</td>
</tr>
<tr>
<td>9.806 65 x 10⁴</td>
<td>9.806 65 x 10⁻¹</td>
<td>1</td>
<td>9.686 23 x 10⁻⁴</td>
<td>1.019 72 x 10⁻²</td>
<td>7.500 62 x 10⁻⁵</td>
</tr>
<tr>
<td>1.333 22 x 10⁴</td>
<td>1.333 22 x 10⁻¹</td>
<td>1.359 51 x 10⁻³</td>
<td>1.315 79 x 10⁻⁶</td>
<td>1.359 51 x 10⁻⁴</td>
<td>7.500 62 x 10⁻⁵</td>
</tr>
</tbody>
</table>
### DCV/DCA Function Specifications

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to ±5 V</td>
<td>0 to ±1 mA</td>
</tr>
</tbody>
</table>

**Accuracy**
- Tested at 23 ±3°C
- ±0.01% of reading + 2 digits: 30 days after calibration
- ±0.03% of reading + 2 digits: 90 days after calibration
- ±0.05% of reading + 3 digits: 6 months after calibration
- ±0.07% of reading + 3 digits: 1 year after calibration

**Readout range**
- 0 to ±60000 V
- 0 to ±24000 mA

**Maximum allowable input**
- 30 V DC
- 100 mA

**Input impedance**
- Approx. 10 MΩ
- Approx. 20 MΩ

**CMRR**
- 120 dB min. (50/60 Hz; Rs = 1 kΩ)

**Temperature effect**
- ±0.01% of reading + 2 digits/°C

- Note: The maximum allowable potential difference between any measuring terminal and the grounding terminal is 42 Vpeak.

### 24 V DC Output Specifications

**Output voltage**
- 24 ±1 V DC (fixed)

**Output current**
- 30 mA max. (with limiter)

- Note: The maximum allowable potential difference between any measuring terminal and the grounding terminal is 42 Vpeak.

### Data Memory Specifications

**Memory capacity**
- 2000 data items

### Specifications of Communication Interfaces (choose one)

- **GP-IB interface**
- Conforms to IEEE Standard 488-1978

- **RS-232 interface**
- Start-stop synchronization

- **Transfer rate**
- 1200, 2400, 4800, 9600 bits/sec

### Specifications of "IDA" Option

**D/A Conversion Output**

<table>
<thead>
<tr>
<th>Output voltage</th>
<th>Example of corresponding output voltages when measured with a 130-kPa gauge-pressure model set to the ±32 V range:</th>
</tr>
</thead>
<tbody>
<tr>
<td>±3 V (high)</td>
<td>0 kPa: 0 V</td>
</tr>
<tr>
<td>±5 V (low)</td>
<td>65 kPa: 1 V</td>
</tr>
<tr>
<td>±5 V (high)</td>
<td>130 kPa: 2 V</td>
</tr>
<tr>
<td>±6 V (low)</td>
<td>156 kPa: 2.4 V</td>
</tr>
<tr>
<td>±6 V (high)</td>
<td>240 kPa: 2.4 V</td>
</tr>
<tr>
<td>±12 V (low)</td>
<td>-80 kPa: -1.230 V</td>
</tr>
<tr>
<td>±12 V (high)</td>
<td>-650 kPa: -1.230 V</td>
</tr>
</tbody>
</table>

**Output resolution**
- 16 bits, where full scale is approximately ±125% of range

**Output accuracy**
- Tested at 23 ±3°C, after zero calibration, using the D/A conversion output terminal
- Add ±0.05% of full scale to accuracy in the Pressure-measurement Specifications section.

**Temperature effect**
- ±0.005% of full scale/°C

**Output update interval**
- Approx. 2 msec

**Response time**
- Same as the response time specified in the Pressure-measurement Specifications section.

**Output resistance**
- 0.1 Ω max.

**Load resistance**
- 1 kΩ min.

### Comparator Output

**Operation**
- HIGH = 1, if measured value > upper limit
- IN = 1, if upper limit ≥ measured value ≥ lower limit
- LOW = 1, if measured value < lower limit
- BUSY = 1, if there is a transition in the output signal

**An LED lamp on the display corresponding to HIGH, LOW or IN comes on.**

**Signal level**
- TTL

### External Trigger

**Input level**
- TTL

**Operation**
- A start-of-measurement trigger is applied at a falling edge when the high-state level of an external signal is input with the HOLD function enabled. At the moment of triggering, the LED lamp on the front panel comes on.

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### DCV/DCA Function Specifications

<table>
<thead>
<tr>
<th>Display</th>
<th>LCD (with backlight); number of readout digits: 5.5 or 4.5*1 digits for pressure measurement and 4.5 digits for measurement with DCV/DCA functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm-up time</td>
<td>Approx. 5 minutes</td>
</tr>
<tr>
<td>Operating temperature/humidity range</td>
<td>5 to 40°C/20 to 80% RH (no condensation)</td>
</tr>
<tr>
<td>Altitude of operation</td>
<td>2000 m max.</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-20°C to 60°C</td>
</tr>
<tr>
<td>Power Supply</td>
<td>Three-way power (AC or DC supply, or optional Ni-Cd batteries)</td>
</tr>
<tr>
<td>AC power rating</td>
<td>100 to 120/200 to 240 V AC, at 50/60 Hz</td>
</tr>
<tr>
<td>DC power rating</td>
<td>10 to 15 V DC</td>
</tr>
<tr>
<td>Battery pack (optional)</td>
<td>Ni-Cd batteries: Last approximately 6 hours in continuous operation mode when fully charged (tested with the backlight, DCV/DCA functions and 24-V DC output turned on). Battery charger: Built into the MT220 main unit</td>
</tr>
<tr>
<td>Power consumption</td>
<td>When in pressure measurement mode: 25 VA max. for 100-V power line; 40 VA max. for 200-V power line</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>20 MΩ min. at 500 V DC, between AC power supply and casing</td>
</tr>
<tr>
<td>Withstanding voltage</td>
<td>1500 V AC (50/60 Hz) for 1 minute, between AC power supply and casing</td>
</tr>
<tr>
<td>External dimensions</td>
<td>Main unit: Approx. 132 mm × 213 mm × 350 mm, excluding protrusions</td>
</tr>
<tr>
<td>Weight</td>
<td>Main unit: See the Pressure-measurement Specifications section. Battery pack: Approx. 2.7 kg</td>
</tr>
</tbody>
</table>

**Acquire**
- Connector for DC power supply (1), rubber pads for rear foot (2), labels for indicating measurement object, test lead (1), power cord (1), and user’s manual (1)

**Specifications of "IDA" Option**

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Enhanced for pressure measurement (except for pressure measurement with the external power source)</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Dimensions</td>
<td>Main unit: Approx. 183 mm × 213 mm × 350 mm, excluding protrusions</td>
</tr>
</tbody>
</table>

**AL**
- ±0.3 mm

- Note: The response time is defined as the interval from the start of change to the time the readout settles to within ±1% of its final value.

- **Power**
  - When in pressure measurement mode: 25 VA max. for 100-V power line; 40 VA max. for 200-V power line
  - When in recharge mode: 45 VA max. for 100-V power line; 65 VA max. for 200-V power line
  - When in DC-powered operation: 10 VA max.

**Insulation resistance**
- 20 MΩ min. at 500 V DC, between AC power supply and casing

**Withstanding voltage**
- 1500 V AC (50/60 Hz) for 1 minute, between AC power supply and casing

**External dimensions**
- Main unit: Approx. 132 mm × 213 mm × 350 mm, excluding protrusions
- Battery pack (optional): Approx. 33 mm × 182 mm × 260 mm, excluding protrusions

**Weight**
- Main unit: See the Pressure-measurement Specifications section. Battery pack: Approx. 2.7 kg

**Accessories**
- Connector for DC power supply (1), rubber pads for rear foot (2), labels for indicating measurement object, test lead (1), power cord (1), and user’s manual (1)

**Specifications of "IDA" Option**

**D/A Conversion Output**

<table>
<thead>
<tr>
<th>Output voltage</th>
<th>Example of corresponding output voltages when measured with a 130-kPa gauge-pressure model set to the ±32 V range:</th>
</tr>
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<tbody>
<tr>
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<tr>
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<tr>
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</tr>
<tr>
<td>±12 V (high)</td>
<td>-650 kPa: -1.230 V</td>
</tr>
</tbody>
</table>

**Output resolution**
- 16 bits, where full scale is approximately ±125% of range

**Output accuracy**
- Tested at 23 ±3°C, after zero calibration, using the D/A conversion output terminal
- Add ±0.05% of full scale to accuracy in the Pressure-measurement Specifications section.

**Temperature effect**
- ±0.005% of full scale/°C

**Output update interval**
- Approx. 2 msec

**Response time**
- Same as the response time specified in the Pressure-measurement Specifications section.

**Output resistance**
- 0.1 Ω max.

**Load resistance**
- 1 kΩ min.

### Comparator Output

**Operation**
- HIGH = 1, if measured value > upper limit
- IN = 1, if upper limit ≥ measured value ≥ lower limit
- LOW = 1, if measured value < lower limit
- BUSY = 1, if there is a transition in the output signal

**An LED lamp on the display corresponding to HIGH, LOW or IN comes on.**

**Signal level**
- TTL

### External Trigger

**Input level**
- TTL

**Operation**
- A start-of-measurement trigger is applied at a falling edge when the high-state level of an external signal is input with the HOLD function enabled. At the moment of triggering, the LED lamp on the front panel comes on.
Models and Suffix Codes

- **Main Units**
<table>
<thead>
<tr>
<th>Product</th>
<th>Model</th>
<th>Suffix Code</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>MT220 series of digital manometers</td>
<td>767351</td>
<td>————</td>
<td>10 kPa-range, gauge-pressure model</td>
</tr>
<tr>
<td></td>
<td>767353</td>
<td>————</td>
<td>130 kPa-range, gauge-pressure model</td>
</tr>
<tr>
<td></td>
<td>767355</td>
<td>————</td>
<td>700 kPa-range, gauge-pressure model</td>
</tr>
<tr>
<td></td>
<td>767356</td>
<td>————</td>
<td>3000 kPa-range, gauge-pressure model</td>
</tr>
<tr>
<td></td>
<td>767357</td>
<td>————</td>
<td>130 kPa-range, absolute-pressure model</td>
</tr>
<tr>
<td>Pressure unit</td>
<td>—U1</td>
<td>kPa</td>
<td></td>
</tr>
<tr>
<td></td>
<td>—U2</td>
<td>kPa, switchable to kgf/cm², mmHg or mmH2O</td>
<td></td>
</tr>
<tr>
<td></td>
<td>—U3</td>
<td>kPa, switchable to psi, inHg, inH2O, kgl/cm², mmHg or mmH2O</td>
<td></td>
</tr>
<tr>
<td>Communication interface</td>
<td>—C1</td>
<td>GP-IB</td>
<td></td>
</tr>
<tr>
<td></td>
<td>—C2</td>
<td>RS-232</td>
<td></td>
</tr>
<tr>
<td>Pressure I/O connection</td>
<td>—P1</td>
<td>Rc 1/4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>—P2</td>
<td>NPT1/4 female-threaded</td>
<td></td>
</tr>
<tr>
<td></td>
<td>—P3</td>
<td>VCO 1/4*</td>
<td></td>
</tr>
<tr>
<td>Power cord</td>
<td>—D</td>
<td>UL standard</td>
<td></td>
</tr>
<tr>
<td></td>
<td>—F</td>
<td>VDE standard</td>
<td></td>
</tr>
<tr>
<td></td>
<td>—R</td>
<td>SAA standard</td>
<td></td>
</tr>
<tr>
<td></td>
<td>—Q</td>
<td>BS standard</td>
<td></td>
</tr>
<tr>
<td>Option</td>
<td>/DA</td>
<td>D/A conversion output, comparator output and external trigger input</td>
<td></td>
</tr>
</tbody>
</table>

- **Optional Accessories**
<table>
<thead>
<tr>
<th>Product</th>
<th>Model</th>
<th>Suffix Code</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery pack</td>
<td>269913</td>
<td>————</td>
<td>Ni-Cd batteries for MT210/220 series</td>
</tr>
<tr>
<td>Ni-Cd batteries</td>
<td>269914</td>
<td>————</td>
<td>A kit of three Ni-Cd batteries for the 269913 battery pack</td>
</tr>
<tr>
<td>Carrying case</td>
<td>B9320ND</td>
<td>————</td>
<td>For use with MT210/220 series</td>
</tr>
<tr>
<td>Connector assembly kit</td>
<td>B9984BW</td>
<td>————</td>
<td>For use with 04 x 06 PVC tubing</td>
</tr>
<tr>
<td>Simplified connector assembly kit</td>
<td>B9310ZH</td>
<td>————</td>
<td>For use with 04 x 06 PVC tubing</td>
</tr>
<tr>
<td>Adapting connector</td>
<td>G9612BG</td>
<td>JIS; R1/4-to-Rc1/8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>G9612BJ</td>
<td>ANSI; R1/4-to-NPT1/4 female thread</td>
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<td>G9612BW</td>
<td>ANSI; R1/4-to-NPT1/8 female thread</td>
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- **Carrying Case**
  Picture of B9320ND carrying case

- **Adapting Connectors for Input Section**
  - Connector assembly kit B9984BW
  - Simplified connector assembly kit B9310ZH
  - Adapting connector (JIS) G9612BG
  - Adapting connector (ANSI) G9612BJ
  - Adapting connector (ANSI) G9612BW

- **Optional Documentation**
<table>
<thead>
<tr>
<th>Item</th>
<th>Document Code</th>
<th>Available No. of Copies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test certificate</td>
<td>DOC TC</td>
<td></td>
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<tr>
<td>User's manual</td>
<td>DOC IM</td>
<td>One per order</td>
</tr>
<tr>
<td>Drawings for approval</td>
<td>3984 03</td>
<td>Five max.</td>
</tr>
</tbody>
</table>

**MT210/210F Digital Manometers**
- High accuracy: ±0.02% of reading
- Maximum allowable input: 500 kPa (130 kPa-range model)
- A wide range of pressures, from low differential pressure of 1 kPa to high gauge pressure of 3000 kPa
- Selection from three measurement modes: normal speed, medium speed and high speed (MT210F series)
- D/A conversion output, comparator output, and external trigger input (optional)
- GP-IB and RS-232 interfaces
- 12-V DC power supply
- Battery operation (optional)

**MT10 Mini-manometer**
- Highly reliable design based on silicon resonant sensor
- Compact
- High accuracy: ±(0.04% of reading + 0.03% of full scale) for 130 kPa-range model
- Three choices of pressure range: 130, 700 and 3000 kPa
- Simple operation
- Data hold function
- RS-232 interface

**MC100 Pressure Standard**
- High accuracy: ±(0.05% of full scale)
- Excellent stability of operation based on silicon resonant sensor
- Two choices of pressure ranges: 25 and 200 kPa
- Output divider function for generating fractions of a pressure setpoint, to a maximum resolution of 1/20
- Output autostep function
- Output sweep function
- Offset monitor function

**CA71 Handy Calibrators**
- Source and measure operations at the same time. DC Voltage, DC Current, Resistance, Thermocouple (TC), Resistance Temperature Detector (RTD), Frequency, Pulse).
- AC voltages, including supply voltage, can be measured.
- Includes a wide array of additional functions.
- Easy operation.
- Compact size and Lightweight.

**NOTICE**
- Before operating the product, read the instruction manual thoroughly for proper and safe operation.
- If this product is for use with a system requiring safeguards that directly involve personnel safety, please contact the Yokogawa sales offices.