Ultra High Purity Transducer, Nonincendive
Models NWU-10, NWU-15 and NWU-16
with and without side access

Applications
- Semiconductor and flat panel display industry
- Microelectronics engineering
- Gas distribution systems
  (Gas sticks, gas panels, bulk-gas supply)
- Ultra high purity water supply

Special Features
- No span adjustment required
- Excellent long-term stability
- Exchangeable electronics
- Ingress protection IP 65 / IP 54 with side access

Description

Universal
As a result of its broad pressure range spectrum from vacuum up to 400 bar (5000 psi), its compact design and its excellent performance, model NWU-10 offers a perfect combination of an appealing design and proven measuring technology.

Flow through transducers of the NWU-15 series have been developed for ultra pure media applications where, apart from the requirement for easy cleaning of the transducer, the application also demands a proven, stable sensor technology. Through the optimised design of the sensor connection, external influences on the sensor signal have been eliminated, even in the case of varying fastening torques of the process connections.

Reliable
Thin-film sensors produced by WIKA have ensured high accuracy, long-term stability and repeatability in industrial pressure measurement instrumentation for decades. We use special thin-film sensors made of 2.4711 (Elgiloy®) in order to meet the particular requirements of the ultra pure media industry.

Hermetically welding of the thin-film sensor guarantees a total separation of medium, as well as a long-term high impermeability which is required by the user.

Versatile
The modular design makes it possible to configure a high number of variants in order to comply with the manifold requirements of UHP applications. All wetted parts are electropolished using state-of-the-art equipment prior to the final assembly.

The integrated potentiometer enables adjustment of the zero point up to 5% of the full scale value. An adjustment of span is not required.

Exchangeable electronics enable replacement of the amplifier without disconnecting the sensors from the process. The high ingress protection (NEMA-4) allows operation even under the most difficult conditions.
## Specifications

<table>
<thead>
<tr>
<th>Models NWU-10, NWU-15, NWU-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>NWU-10 / NWU-15</td>
</tr>
</tbody>
</table>

### Pressure ranges

<table>
<thead>
<tr>
<th>Models</th>
<th>NWU-10</th>
<th>NWU-15</th>
<th>NWU-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure (bar)</td>
<td>4</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Pressure (psi)</td>
<td>40</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

### Over pressure safety

<table>
<thead>
<tr>
<th>Models</th>
<th>NWU-10</th>
<th>NWU-15</th>
<th>NWU-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure (bar)</td>
<td>14</td>
<td>20</td>
<td>32</td>
</tr>
<tr>
<td>Pressure (psi)</td>
<td>120</td>
<td>200</td>
<td>320</td>
</tr>
</tbody>
</table>

### Burst pressure

<table>
<thead>
<tr>
<th>Models</th>
<th>NWU-10</th>
<th>NWU-15</th>
<th>NWU-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure (bar)</td>
<td>70</td>
<td>100</td>
<td>160</td>
</tr>
<tr>
<td>Pressure (psi)</td>
<td>550</td>
<td>720</td>
<td>720</td>
</tr>
</tbody>
</table>

Other pressure ranges and pressure units (e.g. MPa, kg/cm²) on request

1 bar = 14.50 psi

### Measuring principle

Metal thin film sensor

### Materials

- **Wetted parts**: 2,4711 Elgiloy® (Sensor); 316L VIM/VAR (Process connection)
- **Case**: Stainless steel

### Surface finish

Electropolished, typical Ra ≤ 0.18 μm (RA 7); max. Ra ≤ 0.25 μm (RA 10)

### Dead volume

NWU-10 < 1500, NWU-15 < 1000, NWU-16 < 1000

### Permissible Medium

Liquid / Gas / Vapour

### Power supply U

Us in VDC: 10 < Us ≤ 24

### Signal output and maximum ohmic load Ra

4 ... 20 mA, 2-wire

### Max. current consumption li

mA: 30

### Max. permitted input power Pi

W: 40 

### Internal capacity Ci

nF: 11 (+0.3 nF/m with version flying leads - order code: DI)

### Internal inductivity Li

μH: 10 (+2 μH/m with version flying leads - order code: DI)

### Adjustability zero

± 5 via potentiometer

### Response time (10 ... 90 %)

≤ 2 [≤ 100]

### Dielectric strength

VDC: 500

### Accuracy

<table>
<thead>
<tr>
<th>Models</th>
<th>% of span</th>
</tr>
</thead>
<tbody>
<tr>
<td>NWU-10 / NWU-15</td>
<td></td>
</tr>
<tr>
<td>± 0.25</td>
<td>for pressure ranges &gt; 4 bar (BFSL)</td>
</tr>
<tr>
<td>± 0.5</td>
<td>for pressure ranges ≤ 4 bar (BFSL)</td>
</tr>
</tbody>
</table>

2) Including non-linearity, hysteresis, zero point and full scale error (corresponds to error of measurement per IEC 61298-2).

### 1-year stability

<table>
<thead>
<tr>
<th>Models</th>
<th>% of span</th>
</tr>
</thead>
<tbody>
<tr>
<td>NWU-10 / NWU-15</td>
<td></td>
</tr>
<tr>
<td>± 0.2</td>
<td>(at reference conditions)</td>
</tr>
</tbody>
</table>

### Permissible temperature of

- **Medium**: 20...+85 °C / -4...+176 °F
- **Ambience**: 20...+85 °C / -4...+185 °F
- **Storage**: 40...+100 °C / -40...+212 °F

### Compensated temp. range

-20...80 °C / -4...+176 °F

### Temperature coefficients within compensated temperature range:

- **mean TC of zero**: ≤ 0.1 / 10 K
- **mean TC of range**: ≤ 0.15 / 10 K

### CE-conformity

- **Pressure equipment directive**: 97/23/EG
- **EMC directive**: 89/336/EEC emission (class B) and immunity according to EN 61 326

### Ex-protection

- **ATEX**: Category 3G

### Ignition protection type

- IIC T4 oder II 3G Ex nL IIC T4

### Ex-protection FM

- Class I

### Ignition protection type

- Non incendive Class I Division 2 Group A, B, C and D

### Shock resistance

- g: 500 according to IEC 60068-2-27 (mechanical shock)

### Vibration resistance

- g: 10 according to IEC 60068-2-6 (vibration under resonance)

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1 bar = 14.50 psi

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Read the operating conditions and safety-relevant data in the type examination certificate in any case (BVS 06 ATEX E 116 X)

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## Specifications

**Models NWU-10, NWU-15, NWU-16**

<table>
<thead>
<tr>
<th>Wiring protection</th>
<th>Models NWU-10, NWU-15, NWU-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Short-circuit proofness</td>
<td>Sig+ towards UB-</td>
</tr>
<tr>
<td>- Reverse polarity protection</td>
<td>UB+ towards UB-</td>
</tr>
<tr>
<td>Mass</td>
<td>kg</td>
</tr>
<tr>
<td>Approx. 0.1</td>
<td></td>
</tr>
</tbody>
</table>

## Output signal and allowed load

Output current (2-wire)

\[ 4 \ldots 20 \text{ mA} \]

\[ RA \leq (UB - 10 \text{ V}) / 0.02 \text{ A} \]

with RA in Ohm and UB in VDC

### Dimensions in inch [mm] NWU-10

<table>
<thead>
<tr>
<th>Process connection variants</th>
<th>NWU-10</th>
<th>with side access (IP 54 / Nema 3S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot; Weld Stub</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order code: VN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/4&quot; Swivel Male Face Seal,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order code: 71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/4&quot; T-Connector, Weld Stub,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order code: WT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/4&quot; T-Connector, Weld Stub (1&quot;)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order code: WR</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Dimensions in inch [mm] NWU-15

Circular connector
Order code: M4

1/4" Swivel Female Face Seal,
Order code: WI
1/4" Fixed Male Face Seal
Order code: WG
1/4" Swivel Male Face Seal
Order code: 71

1/4" Weld Stub, Order code: VN

Process connection variants

1/4" Swivel Female Face Seal
Order code: 72,
1/4" Swivel Male Face Seal
Order code: 71

1/4" Fixed Male Face Seal
Order code: WG
1/4" Swivel Female Face Seal
Order code: 72

1/4" Fixed Male Face Seal, Order code: WG
1/4" Swivel Male Face Seal, Order code: 71

1/4" Weld Stub, Order code: VN
1/4" Weld Stub, Order code: VN
1/4" Weld Stub, Order code: VN

with side access (IP 54 / Nema 3S)
Process connection variants NWU-15

1/4" Fixed Male Face Seal, Order code: WG
1/4" Fixed Male Face Seal, Order code: WG

1/4" Fixed Male Face Seal High Flow Through, Order Code: WM
1/4" Fixed Male Face Seal High Flow Through, Order Code: WM
only available with pressure ranges up to 25 bar / 300 psi

Dimensions in inch [mm] NWU-16

Bayonet connector
Order code: O4

MSM C
1 1/2" SQ,
Order code: WC

with side access (IP 54 / Nema 3S)

MSM W 1 1/2"
Order code: WD

MSM C 1 1/8" SQ
Order code: WE

MSM W 1 1/8"
Order code: WF
## Dimensions and Wiring details NWU-1*

<table>
<thead>
<tr>
<th>Dimensions in inch [mm]</th>
<th>2-wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circular connector M 12x1 4-pin, IP 65 (NEMA 4) ¹</td>
<td></td>
</tr>
<tr>
<td>Order code: M4</td>
<td></td>
</tr>
</tbody>
</table>

- Non hazardous area UB+/Sig+
- Hazardous (classified) area

- Power supply
- Load (e.g. display)

<table>
<thead>
<tr>
<th>Flying leads</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP 65 (NEMA 4) ¹</td>
</tr>
<tr>
<td>Order code: D1</td>
</tr>
</tbody>
</table>

- Non hazardous area UB+/Sig+
- Hazardous (classified) area

<table>
<thead>
<tr>
<th>Bayonet connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-pin, IP 65 (NEMA 4) ¹</td>
</tr>
<tr>
<td>Order code: O4</td>
</tr>
</tbody>
</table>

- Non hazardous area UB+/Sig+
- Hazardous (classified) area

<table>
<thead>
<tr>
<th>SUB-D connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-pin, IP 54 (NEMA 3S)</td>
</tr>
<tr>
<td>Order code: TX</td>
</tr>
</tbody>
</table>

- Non hazardous area UB+/Sig+
- Hazardous (classified) area

<table>
<thead>
<tr>
<th>Circular Connector R03</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-pin, IP 54 (NEMA 3S)</td>
</tr>
<tr>
<td>Order code: U6</td>
</tr>
</tbody>
</table>

- Non hazardous area UB+/Sig+
- Hazardous (classified) area

- with side access IP 54 (NEMA 3S)

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Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing. Modifications may take place and materials specified may be replaced by others without prior notice.

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