Product Overview of Electric Analog Sensors

Part Number

Series CY

Input parameter
C: current V: voltage F: frequency

Input characteristics
S: AC, AC/DC; T: DC;

Function team number
01~03: DC, 11: 1-phase; 12: 2-Phase/2-Way;
13: 3-phase; 3-wire; 14: 3-phase 4-wire

For new functions (leave blank)

Output functions
0: self power; 1: +5V; 2: +12V; 3: +15V; 4: +24V; 5: ±12V, 6: ±15V
7: +48V, 8: 110V, 9: 220V (AC/DC); A: ±5V

Power source

Structure and mount styles
S0 / U0 / S3 / S4/WS4/WS9 /WF2 /WF3; DIN rail mount;
H1: PCB mount

Accuracy
0.1%; 0.2%; 0.5%, 1.0%

Input Range
For DC Sensors: B + m: Input range m with bi-directional; U + m: Input range m with uni-directional

- B: Bi-directional Input range, B20A means an input range of -20A DC ~ +20A DC
- U: Uni-directional Input range, U20A means an input range of 0 ~ 20A DC

Typical Example:

CYCS11-32WS4-0.5-5A Single Phase AC Current Transducer, Output: 0-5V, Power Source: +12V, Accuracy: 0.5%, Case Style: WS4 with Window Ф4mm, Input Range: 0-5A AC/RMS.
CYCT03-32S3-1.0-U10A DC Current Transducer, Output: 0-5V, Power Source: +12V, Accuracy: 1.0%, Case Style: S3 with Window Ф20mm, Input Range: 0~10A DC.

CYCT03-A2S3-1.0-B10A DC Current Transducer, Output: -5V ~+5VDC, Power Source: +12V, Accuracy: 1.0%, Case Style: S3 with Window Ф20mm, Input Range: -10A ~ +10A DC.

Output Function Codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Symbol</th>
<th>Definition</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vg1</td>
<td>Tracing Voltage Output</td>
<td>5V (V_{pp}), suitable for AC/DC or peak value sampling system, quick response, high precision.</td>
</tr>
<tr>
<td>2</td>
<td>Ig1</td>
<td>Tracing Current Output</td>
<td>20mA (I_{pp}), suitable for AC/DC sampling and peak value sampling system, high precision, and quick response.</td>
</tr>
<tr>
<td>3</td>
<td>Vzu</td>
<td>DC Voltage Output</td>
<td>0-5V DC, can be connected direct to A/D converter, digit panel, indicator, PLC</td>
</tr>
<tr>
<td>4</td>
<td>Izu</td>
<td>DC Current Output</td>
<td>0-20mA DC, suitable for long distance signal transmission, resistance to interference.</td>
</tr>
<tr>
<td>5</td>
<td>Iy</td>
<td>DC Current Output</td>
<td>4-20mA DC, suitable for long distance signal transmission, resistance to interference.</td>
</tr>
<tr>
<td>6</td>
<td>Vg2</td>
<td>Tracing Voltage Output</td>
<td>4V (V_{pp}), suitable for AC/DC or peak value sampling system, quick response, high precision</td>
</tr>
<tr>
<td>7</td>
<td>Ig2</td>
<td>Tracing Current Output</td>
<td>20mA ~ 200mA (I_{pp}), suitable for AC/DC sampling and peak value sampling system, high precision, and quick response.</td>
</tr>
<tr>
<td>8</td>
<td>Vd</td>
<td>DC Voltage Output</td>
<td>0-10 V DC, can be connected direct to digit panel, indicator etc. (power source ≥15V).</td>
</tr>
<tr>
<td>9</td>
<td>Vos</td>
<td>Tracing Voltage Output with Offset</td>
<td>+2.5VDC +/-1.0V or +2.5VDC +/-0.625V, suitable for single power supply systems</td>
</tr>
<tr>
<td>A</td>
<td>Vzb</td>
<td>DC Voltage Output</td>
<td>-5V ~ +5VDC, can be connected direct to A/D converter, digit panel, indicator, PLC</td>
</tr>
<tr>
<td>B</td>
<td>Izb</td>
<td>DC Current Output</td>
<td>-20mA ~ +20mADC, suitable for long distance signal transmission, resistance to interference.</td>
</tr>
<tr>
<td>F</td>
<td>F</td>
<td>OC frequency signal output</td>
<td>0~10 kHz frequency signal or custom frequency signal, photoelectric isolation OC output</td>
</tr>
<tr>
<td>T</td>
<td>T</td>
<td>Special Output</td>
<td>Reserved for special output configurations.</td>
</tr>
</tbody>
</table>
## Typical Operating Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Test condition</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Class 0.2</td>
</tr>
<tr>
<td>Thermal Drift</td>
<td>+12V, 25°C</td>
<td>≤200ppm/°C</td>
</tr>
<tr>
<td>Output Ripple</td>
<td>+12V, 25°C</td>
<td>10mV</td>
</tr>
<tr>
<td>Output Load</td>
<td>+12V, 25°C</td>
<td>≥2kΩ</td>
</tr>
<tr>
<td></td>
<td>Vz (3) output</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+12V, 25°C</td>
<td>≤250Ω</td>
</tr>
<tr>
<td></td>
<td>Iz (4) and ly (5) output</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>+12V</td>
<td>-10°C ~ +70°C</td>
</tr>
<tr>
<td>Isolation Withstanding Voltage</td>
<td>1 min.</td>
<td>≤2500 V DC</td>
</tr>
<tr>
<td></td>
<td>1 min.</td>
<td>≤1500 V DC RMS</td>
</tr>
</tbody>
</table>

### Input / Output Graphs.

a) Tracing Voltage Output (Vg1, Vg2) or Tracing Current Output (Ig1, Ig2)

![Input / Output Graph](image)

b) DC Voltage Output Vzu, Vd and Vzb

![Input / Output Graph](image)
c) DC Current Output $I_{zu}$ and $I_{zb}$

Output $I_{zu}$

\[ \begin{align*}
20mA & \quad \text{Input} \\
0 & \quad X_m \\
\end{align*} \]

Output $I_{zb}$

\[ \begin{align*}
20mA & \quad \text{Input} \\
-X_m & \quad 0 \\
-X_m & \quad -20mA \\
\end{align*} \]

d) DC Current Output $I_y$

Output $I_y$

\[ \begin{align*}
20mA & \quad 12mA & \quad 4mA \\
0 & \quad 0.5X_m & \quad X_m \\
\end{align*} \]

Output $I_y$

\[ \begin{align*}
20mA & \quad 12mA & \quad 4mA \\
-X_m & \quad -X_m & \quad X_m \\
\end{align*} \]

e) Tracing Voltage Output $V_{os}$

\[ \begin{align*}
X_m & \quad \text{Input} \\
0 & \quad -X_m \\
\end{align*} \]

Output $V_{os}$

\[ \begin{align*}
Vo+V_m & \quad Vo & \quad Vo-V_m \\
0 & \quad 0 & \quad 0 \\
\end{align*} \]

Output Signal Limitations of Sensors with Single Power Supply

Internal DC/DC Converting of Single Power Supply:

\[ \begin{align*}
+V_C & \quad (+12V, +15V, +24V) \\
\text{DC/DC Converter} & \quad +V_C \\
\text{DC/DC Converter} & \quad +V_D \\
\text{DC/DC Converter} & \quad -(+48V, +110V, 220V) \\
\text{DC/DC Converter} & \quad -V_D \\
\end{align*} \]
<table>
<thead>
<tr>
<th>Power supply $V_C$</th>
<th>Power supply $V_D$</th>
<th>Output Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>$+12$VDC</td>
<td>$-6$VDC</td>
<td>Not $0$-$10$VDC and $-10$V$-$+$10$VDC, all other output signals are available</td>
</tr>
<tr>
<td>$+15$VDC</td>
<td>$-6$VDC</td>
<td>Not $-10$V$-$+$10$VDC, all other output signals are available</td>
</tr>
<tr>
<td>$+24$VDC</td>
<td>$-15$VDC</td>
<td>All output signals are available</td>
</tr>
<tr>
<td>$\pm12$VDC</td>
<td>x</td>
<td>Not $-10$V$-$+$10$VDC, all other output signals are available</td>
</tr>
<tr>
<td>$\pm15$VDC</td>
<td>x</td>
<td>All output signals are available</td>
</tr>
<tr>
<td>$+48$VDC</td>
<td>$\pm15$VDC or $\pm24$VDC</td>
<td>All output signals are available</td>
</tr>
<tr>
<td>$+110$VDC</td>
<td>$\pm15$VDC or $\pm24$VDC</td>
<td>All output signals are available</td>
</tr>
<tr>
<td>220V DC/AC</td>
<td>$\pm15$VDC or $\pm24$VDC</td>
<td>All output signals are available</td>
</tr>
</tbody>
</table>

**Application Notes**

1. **Connection of Double Power Supplies**

   ![Diagram](V1V2Diagram.png)

   **Voltage Source 1 (V1)**
   
   **Voltage Source 2 (V2)**

   $+V$: $+12$, $+15$VDC

   $-V$: $-12$, $-15$VDC

2. **Reduction of Power supply**

   The deviation of the power supply is normally $\pm5\%$ $\sim$ $\pm10\%$. If the voltage source is higher than the power supply one can use the following circuit to reduce the voltage source.

   ![Diagram](ReductionDiagram.png)

   D0: general diode (one can also use two diodes)
   C0: decoupling capacitor 1µF (recommended)
   R0: 1$\sim$5kΩ, 0.5W$\sim$1W

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