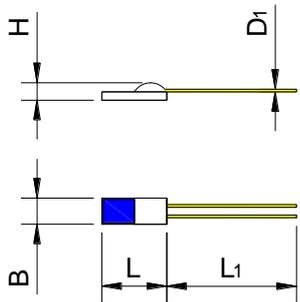


## Platinum-Resistance-Temperature-Detector: CRAG Series

Platinum-chip temperature sensors of the CRAG type can universally use and are suitable for a wide range of applications in low and higher temperature ranges up to 600°C. The gold-plated connecting wires are suitable for all common connection techniques: welding, soldering and crimping.

The application temperature range is -200°C ... +600°C. The CRAG series is available in tolerance classes 1/5B (F0.06) & 1/10B (F0.03).

| Type                                  | CRAG Series   |                  |                  |
|---------------------------------------|---|------------------|------------------|
| Operating temperature range           | -200°C ... +600°C   |                  |                  |
| Tolerance validity range<br>IEC 60751 | 1/10B   | F0.03            | -20°C ... +200°C |
|                                       | 1/5B  | F0.06            | -20°C ... +200°C |
|                                       | 1/3B  | F 0.1            | -30°C ... +200°C |
|                                       | A   | F 0.15           | -30°C ... +300°C |
|                                       | B   | F 0.3            | -70°C ... +600°C |
| 2B                                    | F 0.6   | -70°C ... +600°C |                  |
| Resistance value                      | Pt100 also double<br>Pt500 also double<br>Pt1000 also double              |                  |                  |
| Measuring/maximum current             | Pt100: 1 mA ... 7 mA<br>Pt500: 0.7 mA ... 3 mA<br>Pt1000: 0.1 mA ... 1 mA |                  |                  |
| Measuring point                       | 2mm from the open end   |                  |                  |
| Temperature coefficient               | 3850 ppm/K (3810 , 3750 etc.)   |                  |                  |
| Long-term stability                   | max. R <sub>0</sub> -Drift 0.05 %/year                                    |                  |                  |
| Max tensile force                     | 5N .. 10N (see table page 2)  |                  |                  |



| Available models   |                   |     |      |     |   |      |    |                 |     |     |   |   |    |
|--------------------|-------------------|-----|------|-----|---|------|----|-----------------|-----|-----|---|---|----|
| Temperature sensor |                   |     |      |     | Lead wire   |      |    | Tolerance class |     |     |   |   |    |
| Type               | R <sub>0</sub> /Ω | B   | L    | H   | Material  | D1   | L1 | 1/10            | 1/5 | 1/3 | A | B | 2B |
| CRAG-1216-100      | 100               | 1.2 | 1.6  | 1.1 | Nickel<br>Au plated Ni<br>Pt plated Ni<br>Sn plated Ni<br>Silver<br>Isolated wire | 0.2  | 10 | ●               | ●   | ●   | ● | ● | ●  |
| CRAG-1216-500      | 500               | 1.2 | 1.6  | 1.1 |   | 0.2  | 10 | ●               | ●   | ●   | ● | ● | ●  |
| CRAG-1216-1000     | 1000              | 1.2 | 1.6  | 1.1 |   | 0.2  | 10 | ●               | ●   | ●   | ● | ● | ●  |
| CRAG-1605-100      | 100               | 1.6 | 5.0  | 1.1 |   | 0.25 | 10 | ●               | ●   | ●   | ● | ● | ●  |
| CRAG-1605-1000     | 1000              | 1.6 | 5.0  | 1.1 |   | 0.25 | 10 | ●               | ●   | ●   | ● | ● | ●  |
| CRAG-1204-100      | 100               | 1.2 | 4.0  | 1.1 |   | 0.25 | 10 | ●               | ●   | ●   | ● | ● | ●  |
| CRAG-1204-1000     | 1000              | 1.2 | 4.0  | 1.1 |   | 0.25 | 10 | ●               | ●   | ●   | ● | ● | ●  |
| CRAG-2004-100      | 100               | 2.0 | 4.0  | 1.1 |   | 0.25 | 10 | ●               | ●   | ●   | ● | ● | ●  |
| CRAG-2004-1000     | 1000              | 2.0 | 4.0  | 1.1 |   | 0.25 | 10 | ●               | ●   | ●   | ● | ● | ●  |
| CRAG-2005-100      | 100               | 2.0 | 5.0  | 1.1 |   | 0.25 | 10 | ●               | ●   | ●   | ● | ● | ●  |
| CRAG-2005-1000     | 1000              | 2.0 | 5.0  | 1.1 |   | 0.25 | 10 | ●               | ●   | ●   | ● | ● | ●  |
| CRAG-2023-100      | 100               | 2.0 | 2.3  | 1.1 |   | 0.25 | 10 | ●               | ●   | ●   | ● | ● | ●  |
| CRAG-2023-500      | 500               | 2.0 | 2.3  | 1.1 |   | 0.25 | 10 | ●               | ●   | ●   | ● | ● | ●  |
| CRAG-2023-1000     | 1000              | 2.0 | 2.3  | 1.1 |   | 0.25 | 10 | ●               | ●   | ●   | ● | ● | ●  |
| CRAG-2010-100      | 100               | 2.0 | 10.0 | 1.3 |   | 0.25 | 10 | ●               | ●   | ●   | ● | ● | ●  |
| CRAG-2010-1000     | 1000              | 2.0 | 10.0 | 1.3 |   | 0.25 | 10 | ●               | ●   | ●   | ● | ● | ●  |
| CRAG-3010-100      | 100               | 2.9 | 9.8  | 1.3 |   | 0.25 | 10 | ●               | ●   | ●   | ● | ● | ●  |
| CRAG-2804-100      | 2x 100            | 2.8 | 4.4  | 1.1 |   | 0.25 | 10 | ●               | ●   | ●   | ● | ● | ●  |
| CRAG-2804-500      | 2x 500            | 2.8 | 4.4  | 1.1 |   | 0.25 | 10 |                 |     |     |   | ● | ●  |
| CRAG-2804-1000     | 2x 1000           | 2.8 | 4.4  | 1.1 |   | 0.25 | 10 |                 |     |     |   | ● | ●  |

Customized versions on request, e.g. other wire lengths, insulation, dimensions,...

Dimensional tolerances: ΔB = ±0.15 / ΔL = ±0.2 / ΔH = ±0.15 / ΔS = ±0.05 / ΔD1 = ±0.01 / ΔL1 = ±1.0  
Dimensions in mm

Changes and errors excepted

| Self-heating coefficients and response times |                                    |                           |                           |                  |
|--|------------------------------------|---------------------------|---------------------------|------------------|
| Type   | Self-heating coefficient E in K/mW |                           | Response times in seconds |                  |
|  | Air<br>(v = 1 m/s)                 | in water<br>(v = 0.4 m/s) | in Air<br>(v = 1 m/s)     |                  |
|  |                                    |                           | t <sub>0.9</sub>          | t <sub>0.9</sub> |
| CRAG-1216                                    | 0.6                                | 0.15                      | 6                         |                  |
| CRAG-2023                                    | 0.5                                | 0.2                       | 10                        |                  |
| CRAG-1204                                    | 0.5                                | 0.2                       | 10                        |                  |
| CRAG-2005                                    | 0.33                               | 0.4                       | 10                        |                  |
| CRAG-2095                                    | 0.25                               | 0.4                       | 20                        |                  |
| CRAG-3010                                    | 0.16                               | 0.5                       | 45                        |                  |
| CRAG-2804                                    | 0.5                                | 0.2                       | 10                        |                  |
| CRAG-2010                                    | 0.33                               | 0.35                      | 17                        |                  |

| Size in mm            | Wire material      | ∅ wire in mm | Max. tensile force in N |
|-----------------------|--------------------|--------------|-------------------------|
| 2x2.3                 | Ni-wire, AuNi-wire | 0,25         | 8                       |
| 2x2.3                 | Ag-wire            | 0,30         | 8                       |
| 2x2.3                 | Pt-Ni wire         | 0,20         | 8                       |
| 2x4, 2x5              | Ni-wire, AuNi-wire | 0,25         | 9                       |
| 2x4, 2x5              | Ag-wire            | 0,30         | 8                       |
| 2x4, 2x5              | Pt-Ni wire         | 0,20         | 8                       |
| 2x10, 3x10            | Ni-wire, AuNi-wire | 0,25         | 10                      |
| 2x10, 3x10            | Ag-wire            | 0,30         | 9                       |
| 2x10, 3x10            | Pt-Ni wire         | 0,20         | 9                       |
| 1.2x1.6, 1.2x4, 1.6x5 | Ni-wire, AuNi-wire | 0,20         | 6                       |
| 1.2x1.6, 1.2x4, 1.6x5 | Ag-wire            | 0,25         | 5                       |
| 1.2x1.6, 1.2x4, 1.6x5 | Pt-Ni wire         | 0,20         | 6                       |