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# Circular Recorders

OMEGACARE℠ Extended Warranty Program

**CT7000 Series Starts at**

**$1132**

CE cUL 3 YEAR WARRANTY MADE IN USA

- **1- or 2-Pen Versions**
- **254 mm (10") Chart**
- **Accepts Thermocouple, RTD, V, mV, or mA Signals**
- **Programmable Inputs, Speed, and Alarms**
- **4-Digit Display per Pen**
- **Isolated Inputs**

The CT7000 microprocessor-based circular chart recorder measures, displays, records, and controls up to 2 process variables from a variety of inputs. Record and control functions, alarm settings, and other parameters are easily configured via the 3 front keys. The CT7000 offers a 254 mm (10") circular chart and 4-digit LED display(s). Display resolution and filters are user configurable.

Each pen has 2 alarm settings. Alarms are user configurable as process high or low, deviation from setpoint (above or below), or deviation band (open or closed within band). Alarm hysteresis adjustment is also user configurable. Optional control capability includes on/off and PID control. Output type selections include SPST relay, SSR driver, and 4 to 20 mA DC (user configurable to 0 to 20 mA DC). Also, 4 to 20 mA DC outputs may be used for retransmitting the process value. Digital communications is optional.



**Low-noise thermocouple probes sold separately, GKQSS-316G-12, $28, GTQSS-316G-12, $28, see section A.**

## Specifications

**Input Ranges**

**Thermocouple:**

**J:** 0 to 760°C (0 to 1400°F)
**K:** 0 to 1360°C (0 to 2500°F)
**T:** -220 to 400°C (-330 to 750°F)
**E:** 0 to 750°C (0 to 1400°F)
**N:** 0 to 1300°C (0 to 2370°F)
**R:** 200 to 1650°C (400 to 3000°F)
**S:** 200 to 1650°C (400 to 3000°F)
**B:** 200 to 1800°C (400 to 3300°F)
**C:** 200 to 2300°C (390 to 4170°F)

**RTD:**
100 Ω (0.00385 Ω/Ω/°C), -140 to 400°C (-220 to 750°F)

**Volts DC:** 0 to 25 mV, 0 to 50 mV, 10 to 50 mV, 0 to 5 V, 1 to 5 V

**Milliamps:** 4 to 20 mA DC (via appropriate external shunt resistor)

**Performance**

**Measurement Error Limit**

**Thermocouple Types J, K, T, E, N and RTD:** ±0.25% of reading + 1° @ 25°C (77°F)

**Type R, S, B, C Thermocouples:** ±0.25% of span @ 25°C (77°F)

**mVdc and Vdc:** ±0.25% of scaled span plus 1 least-significant digit

**Ambient Temperature Error Limit:** 0.01% of span per °C (1.8°F) deviation from 25°C (77°F)

**Process Value Output Error Limit:** ±0.5% of span

**Record Error Limit:** ±0.5% of chart span or better, typically; ±1.0% of chart span maximum

**Display/Record Filter:** 1 to 20 scans averaging

**Pen Resolution:** 0.15% of chart span

**Recording Deadband:** 0.3% of chart span

**Process Filter:** 1 to 20 scans averaging

**Pen Response (Full Scale Deflection):** 20 s

**Display Resolution**

**T/C and RTD:** 0.1 or 1°

**mVdc and Vdc:** 0.001, 0.01, 0.1 or 1

**Calibration Drift:** Self-compensating for ambient temperature; all calibration values are stored in memory

**Sensor Fault Detection:** Displays "Hi" or "Lo" process input (10% above or below range) and sensor break "SnSr"; pen action on error condition is user configurable to 0 or 100% of chart span; on/off outputs go "off"; proportional outputs go to user-defined value from 0 to 100%

**Record**

**Chart:** 254 mm (10") circular chart

**Chart Range:** -9999 to 9999

**Chart Drive:** DC stepper motor



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**Chart Rotation:**
User configurable from 0.1 to 999.9 hours per revolution

**Pen Type:** Disposable fiber-tip

**Pen Color:** Pen 1, red; pen 2, green

### Display

**Digital Displays:**
2 possible: 1 per installed pen; (4) 7-segment digits, 14 mm (0.56") high, red LEDs, automatic (-) positioning, decimal point positioning

**Alarm Display:**
2 alarm indications possible per pen; ALRM1 and ALRM2; red LEDs; single ALRM indication provided for controller pens

**Status Display:**
LED indicates Out 1, Out 2, Man, Ramp, Soak, Seg 1 through Seg 6, process units as applicable

**Alarms:** Process, deviation (with hysteresis), deviation band

### Outputs (Optional)

**Relay:** SPST, 115 Vac: 250 VA, 230 Vac: 250 VA

**SSR Driver:** Open-collector output, short circuit protected @ 100 mA maximum, provided 4 Vdc at 20 mA or 3 Vdc @ 40 mA

**Current:**
0 to 20 or 4 to 20 mA DC into 650 Ω max (control or process value)

### Control Parameters

**Proportional Band Output:**
1 to 3000 units

**Manual Reset (Integral):**
-1500 to 1500 units

**Auto Reset (Integral):**
0 to 100 repeats/min

**Rate (Derivative):** 0 to 10 min

**Cycle Time Output:** 1 to 240 s

### Physical

**Dimensions:** 335 H x 384 W x 92 mm D (13.2 x 15.1 x 3.6")

**Panel Cutout:**
321 H x 343 mm W (12.6 x 13.5")

**Weight:** 9.1 kg (20 lb), maximum

**Vibration:** 0.5 to 100 Hz @ 0.2 g

**Keypad:** Located on front cover, tactile feedback membrane keys

**Enclosure:** Gasketed cover; black, structural foam

**Windows:** Plexiglass standard

**Memory Backup:**
Battery, 5-year minimum life

**Common-Mode Rejection:**
90 dB minimum; 24 Vac maximum for RTD input; 15 Vac maximum for other inputs

**Normal-Mode Rejection:**
85 dB minimum @ 60 Hz or greater

**Line Voltage:**
115/230 Vac ±10%, 50/60 Hz



**Power Consumption:** 25 VA max

**Operating Temperature:**
0 to 55°C (32 to 131°F)

**Storage Temperature:**
-40 to 65°C (-40 to 149°F)

**Humidity:**
0 to 90% RH, non-condensing

**Transmitter Power Supply:**
Provides up to 40 mA at 24 Vdc

**ESD:** No effect from 5000 V static charge over surface area

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## To Order *(Specify Model Number)*

| Model No. | Price | Description |
|---|---|---|
| **CT7100** | **$1132** | Recorder, circular, 1 pen |
| **CT7110** | **1432** | Recorder, circular, 2 pens |
| **CT7102** | **1217** | Recorder, 1 pen, 2 relays |
| **CT7102-XPS** | **1332** | Recorder, 1 pen, 2 relays, transmitter power supply |
| **CT7114** | **1603** | Recorder, 2 pens, 4 relays |
| **CT7202** | **1521** | Recorder, control, 1 pen, 2 relays |
| **CT7224** | **2165** | Recorder, control, 2 pens, 4 relays |

*Comes complete with operator's manual, pens and 100 charts. OMEGACARE℠ extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order.*

### Accessories

| Model No. | Price | Description |
|---|---|---|
| **CT7000-GREEN** | **$25** | Pens, green, package of 5, channel 2 only |
| **CT7000-RED** | **25** | Pens, red, package of 5, channel 1 only |
| **CT7000C-0-100/24** | **21** | Paper, circular, 100 qty |
| **CT7000C- (range/time*)** | **21** | Paper, circular, 100 qty |

***** *Other standard ranges:* ***0-600/24, 0-400/24, 0-200/24, 30-230F/24, 0-100/7, 0-1000/24, 0-300/24, 0-300/7, 0-800/24, 0-2000/24, -50-50/7, 0-200/7, 0-2500/24, 0-1200/24, 60-180F/24, 0-14PH/24, -50-50/24.***

***Note:*** *Recorder may be supplied with other configurations of options.*
*For 230 Vac power option, add suffix "****-230V****" to model number and add* ***$69*** *to price.*
*For CSA approval, add suffix "****-CSA****" and add* ***$10*** *to price.*

***Ordering Examples: CT7110,*** *2-pen circular recorder,* ***CT7000-RED, CT7000-GREEN,*** *spare pens,* ***CT7000C-0-100/24,*** *spare paper, 1432 + 25 + 25 + 21 =* ***$1503. CT7202,*** *recorder control, 1 pen, 2 relays,* ***$1521.***

***OCW-1,*** *OMEGACARE℠ extends standard 2-year warranty to a total of 3 years* ***($150).***



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