Microprocessor-Based Circular Chart Recorder

CT6100 Series

- ✔ **Accepts Thermocouple, RTD, Vdc, and mA DC Inputs**
- ✔ **High Accuracy and Stability**
- ✔ **User Configurable via Front-Panel Keypad**
- ✔ **Easy-to-Use Menu-Driven Interface for Rapid Configuration and Calibration**
- ✔ **Available in 1-, 2-, or 3-Pen Versions**
- ✔ **Large-Character Alphanumeric LCD with Backlight**
- ✔ **Simultaneous Digital Display of Process Variable for Each Channel**
- ✔ **Programmable Locks for Security**

CT6103 shown smaller than actual size.

The CT6100 Series microprocessor-based circular chart recorders are available in 1-, 2-, or 3-channel variants. They combine the simplicity and clarity of pen drawing with the versatility of microprocessor control. Each channel is compatible with all industry-standard sensors and signals, including thermocouple Types J, K, T, E, N, R, S, and B; Pt100 platinum RTDs; and 4 or 20 mA current loops.

Low and high measurement ranges are provided for each input type; separate range cards are not required. Multi-input versions feature optoelectronic isolation of the input stages to eliminate troublesome installation ground loops. Multislope integrating 16-bit A/D converters ensure precise measurement by sampling the input every 0.5 seconds.

Thermocouple and RTD characteristics are fully linearized. The recorders use automatic cold-junction compensation for thermocouple measurement.

All CT6100 Series models feature alarm relays. Single-pen recorders are equipped with 3 fail-safe single-pole changeover relays; 6 relays are standard on the 2- and 3-pen versions. Color-coded LEDs indicate the status of each relay. All relay functions are user selectable; setpoint values and hysteresis levels are entered directly via the keypad, while relay action and channel assignment are selected from user-friendly menus. Circuit precision is matched by the backlash-free pen-drive mechanism, which has a positioning resolution

greater than 0.1%. An integral feedback potentiometer enables closed-loop monitoring of each pen position.

Each recorder uses a low-maintenance stepper motor. The rotation speed of the 244 mm diameter chart is microprocessor controlled and user programmable.

All CT6100 recorders are housed in a strong molded case that can be panel or surface mounted. A gasket-lockable door protects internal components from harsh industrial environments and offers protection rated to NEMA 12 (IP55). A tough acrylic window lets the user view the chart trace, digital channel readings, and alarm status with the recorder's door closed.
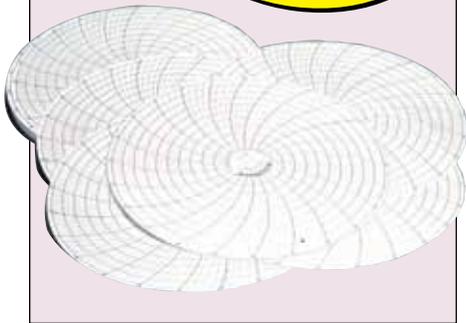
Specifications
Inputs

Input Types: Thermocouple K, T, J, N, E, B, R, S; Platinum RTD (Pt100) 3-wire; ±2V, +20 Vdc; ±2 mA, ±20 mA

Input Ranges: Thermocouples to BS4937 (type B minimum temp 200°C); RTD to BS1904:1984

Cold Junction Compensation: Automatic; ±0.02°C/°C stability

Input Resistance:
 Thermocouple: 10 MΩ
 ±2 mA: 200 Ω
 ±20 mA: 20 Ω
 ±2V, ±20V: >1 MΩ

Min Span: 5°C (9°F), thermocouples K, J, T, E, N and RTD; 50°C (90°F) other thermocouple types, 50 mV, 200 mA

T/C BURN-OUT: Pull-up or pull-down, selectable

RTD Lead Resistance: 3-wire, compensated up to 10 Ω maximum per lead

Input Protection: ±50 Vdc on signal inputs

Input Isolation: Optoelectronic on 2 and 3 input models 500 Vrms channel-to-channel, 500 Vrms channel-to-ground

Sensor/Transmitter Power: 12 or 24 Vdc, 25 mA, selectable; for current loop inputs

Performance
Accuracy:
 RTD, Low Range (-200 to 200°C): ±0.2°C
 RTD, High Range (200 to 850°C): ±0.8°C
 Thermocouple: ±0.25% full scale
 Voltage/Current: ±0.2% full scale

Temperature Stability: ±0.02% FS/°C

Linearization Accuracy:
 T/C Types J, K, T, N, E: ±0.1°C, -50 to 200°C, ±1°C maximum
 T/C Types R and S: ±0.2°C, -50 to 200°C, ±1°C maximum
 T/C Type B: ±1°C maximum
 RTD: ±0.1°C, -200 to 850°C

Calibration Shift: ±10°C user programmable to eliminate sensor errors (thermocouple and RTD)

Chart and Display

Chart Size: 244 mm (9.6") diameter; 40, 50, 60, 70 or 80 linear divisions

Chart Drive: DC stepper motor

Chart Speeds: 1 to 24 hours in steps of one hour, 2 to 31 days in steps of 1 day

Writing Method: Disposable ink cartridges; pen 1-red; pen 2-green; pen 3-blue

Pen Positioner: DC stepper motor

Positioning Resolution: >0.1% full scale

Response Time: Zero to full scale in 4.5 seconds

Pen Lift: Powered, activated from front panel; chart fast time advance possible with pens raised

Display: 2 line x 20 character dot matrix liquid crystal with backlight and automatic temperature compensation; 9.6 mm (0.37") character height

Display Resolution: 0.1°C for temperature inputs, software programmable for voltage/ current inputs

Alarm Display: Relay status shown by red and green front panel LEDs

Relays

Type: SPDT; 30 Vdc or 250 Vac @ 6 A maximum; 150 W DC, 1660 Vac non-inductive

Action: Software selectable from: high alarm/low alarm/deviation alarm/control relay (high)/control relay (low); relays de-energize in alarm state; assignable to any channel

Hysteresis: User programmable 0.0 to 10% span

Snubber Network: 22 nF and 100 Ω across each contact

Analog Output (Option)

Type: 0 to 20/4 to 20 mA; assignable to any channel; range selectable within any segment of chart range

Resolution: 12-bit

Compliance: 20V approx

Isolation: Optoelectronic

Action: direct or reverse

General

Security: 3-level software lock including password protection, internal hardware jumper lock, lockable door

Power: 115 or 230 Vac ±10%, switch selectable, 50/60 Hz: terminal block connection

Power Requirements: <25 W

Operating Ambient: 0 to 55°C (32 to 131°F), 0 to 90% RH (non condensing)

Case: Steel, with glass-filled polyester resin door with acrylic window

Protection: NEMA 12 (IP55)

Mounting: Panel or surface

Dimensions: 336 W x 396 H x 171 mm D (13.2 x 15.6 x 6.7")

Weight: From single pen: 7 kg (15.4 lb) to three pen: 7.7 kg (17.0 lb)

Panel Cutout: 288 W x 356 mm H (11.3 x 14.0")

To Order *Visit omega.com/ct6100 for Pricing and Details*

Model No.	Description
CT6101	1-pen recorder with 3 relays and transmitter power supply
CT6102	2-pen recorder with 6 relays and transmitter power supply
CT6103	3-pen recorder with 6 relays and transmitter power supply

Accessories

Model No.	Description
CT6100-RED	Red pens, pack of 3
CT6100-GREEN	Green pens, pack of 3
CT6100-BLUE	Blue pens, pack of 3
CT6100-0-100/24H	100 chart papers, 24 hours
CT6100-0-100-31D	100 chart papers, 31 days
POWERCORD-SE	Power cord with one end stripped

Option*

Order Suffix	Description
-PV	Analog output of 0 to 20 mA or 4 to 20 mA, assignable to any channel

* Option is not field installable. It must be ordered at the time of purchase.
Comes complete with 1 package of 24 hour chart paper, pen(s) and operator's manual.
Ordering Example: CT6101, *1-pen recorder with 3 relays and transmitter power supply and* **POWERCORD-SE,** *power cord.*
OCW-3, *OMEGACARE℠ extends standard 1-year warranty to a total of 4 years.*

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