



Circular Chart Recorder/ Controllers CTC1900 Series



Model CTC1900
\$1530
Basic Unit

- ✓ 254 mm (10") Chart
- ✓ 1 to 4 Pens
- ✓ 1 or 2 Controllers
- ✓ Thermocouple, RTD, Voltage and Current Inputs
- ✓ NEMA-4X/IP66 Construction
- ✓ Multiple 6-Digit Indicator Panels
- ✓ 0.1% Accuracy
- ✓ PID Autotune on Demand
- ✓ Totalizers and Math Functions Built In
- ✓ RS-485 Modbus Serial Communications
- ✓ 20 Programmable Ramp/Soak Profiles

The CTC1900 provides full PID control of one or two process loops in addition to its powerful recording facilities. The control loops can operate independently or be soft-linked together to implement Cascade or Master/Slave control strategies. Each loop has a dedicated ¼ DIN-style operator panel for ease of operation and clarity of display.

The control output is selectable to fit any application with a choice of analog, time proportioning or valve positioning relays; use of a feedback potentiometer to ensure precise valve control is fully supported. Heating/cooling operation is available on both loops.

Operation of the autotune function on either loop instigates a tuning routine which allows the CTC1900 to calculate the optimum PID parameters for that particular loop. Following the completion of autotune, the PID values are automatically updated.

Dedicated membrane keys on each operator panel enable one-touch operation for selection between manual and automatic loop control and for switching from local to remote set point.



Specifications

Recording
Traces: Up to 4
Colors: Red, green, blue, black
Chart: 254 mm (10") circular
Chart Speed: 1 to 167 hours or 7 to 32 days per revolution
Trace Response: 7 sec full scale
Trace Resolution: 0.1% steps

Operation

Display:
Number: Dual display for process value and setpoint for each controller, plus individual display for each record-only channel
Type: 6-digit red LED, 0.56" (14 mm) high
Status Indicators: Indicate channel number on display (on record-only chan.) Indicate remote setpoint, autotune or manual operation
Alarm Indicators: Indicate channels with active alarms
Panel Keys:
Function: Programming access, increment/decrement, auto/manual, pen lift and user-defined function key

Advanced Processing Functions

Totalizers:
Number: 1 per pen
Size: 99,999,999 max.
Output: External counter driver "wrap pulse" signal
Math:
Number of equations: 4
Type: +, -, x, ÷, low & high select, max, min, average, mass flow, RH
Timers:
Number: 2

Type: Real-time clock driven event, adjustable duration
Output: Relay, digital output, logic equation

Alarms and Logic

Alarms:
Number: 4 per channel
Type: High/low process, fast/slow rate of change, deviation high/low, output high/low
Adjustment: Hysteresis, time delay
Logic Equations:
Number: 8
Function: OR, AND
Inputs: Alarm states, digital inputs, totalizers, logic
Outputs: Relays, digital outputs, chart stop, alarm knowledge

Analog Inputs

Number: 1, 2, 3 or 4
Input Sampling Rate: 250 ms per channel
Type: Universally configurable to provide: Thermocouple (TC), Resistance thermometer (RTD), Millivolt, Current, dc Voltage, Resistance

Linearizer Functions: Programmable for all input including: $\sqrt{\quad}$, $x^{3/2}$, $x^{5/2}$, T/C types B, E, J, K, R, S, T, L, N or Pt100

Isolation: 500 Vdc channel/channel
Digital Filter: 0 to 60 s programmable

Broken Sensor Detection: Programmable UP/DOWN scale, RTD short/open circuit detection

Cold Junction Compensation: Automatic CJC incorporated as standard
Transmitter Power Supply: 25 mA max. 1 per channel, fitted as standard, 24 Vdc
Isolation: 500 Vdc channel/channel

Analog Outputs

Type: 4 to 20 mA
Accuracy: $\pm 0.1\%$

Analog Inputs

Maximum Load: 750 Ω
Isolation: 500 Vdc
Relay Outputs
Type: SPDT
Rating (with non-inductive load):
 5 A at 115/230 Vac
Digital Inputs

Type: TTL or volt-free
Minimum Pulse: 250 ms
Isolation: 500 Vdc between modules, no isolation within module
Digital Outputs

Type: 5 V TTL
Rating: 5 mA per output
Isolation: 500 Vdc between modules, no isolation within module
PID Control

Number of Loops: 1 or 2
Control Outputs:

Relay, logic or dc analog
Control Types: Time proportioning, analog

Control Action: PID, on/off, motorized valve position, boundless

Autotune:
 On demand, at start-up or at set point

Option Modules

Number: 5
Connection: Plug in cards with detachable connection blocks

Event Pens

Standard: 3-position event recording on any channel

Real Time (optional):

3-position event recording on the same time line as pen 1

Physical

Size: 382 W x 386 H x 142 mm D (15.04 x 15.23 x 5.57")

Weight: 8.2 kg (18 lb) approx.

Panel Cut-Out:

355.6 W x 285.75 mm H (14.0 x 11.25")

Case Material:

Glass-filled polyester polycarbonate

Window Material: Polycarbonate

Environmental

Operational Temperature Range:

0 to 55°C (32 to 130°F)

Operational Humidity Range:

5 to 95% RH (non-condensing)

5 to 80% RH (chart only)

Case Sealing: NEMA-4X (IP66)

Noise Rejection:

Common mode >120 db at 50/60 Hz

Normal (series) mode >60 db at 50/60 Hz

CJC Rejection Ratio: <0.05°C/°C

Sensor Break Protection:

Upscale or downscale drive

Out of Range Detection:

0 to 100% of engineering span

Temperature Stability:

<0.02% of reading/°C or 1 μV/°C

Long-Term Drift: <0.01% of reading

10 μV annually

Input Impedance: >10 MΩ

(mV and V inputs) 100 Ω (mA input)

Electrical

Power Supply: 85 to 265 Vac 50/60 Hz

line frequency or 24 ± 4 Vdc (optional)

Power Consumption: 40 VA max;

General Safety: IEC 348

Approvals:

CE, CSA, Class 1 Div 2 (optional)

Electrical Connections: Screw terminals

Memory Protection:

Nonvolatile EEPROM

Serial Communication Module:

RS-485 (4-wire) protocol programmable

1200 to 9600 baud. MODBUS rtu (slave)

protocol. Instrumentation protocol

Input Type	Min. Value	Max. Value	Min. Span	Accuracy (% of reading)
Millivolts	0	150	5	±0.1% or ±10 μV
Volts	0	5	.1	±0.1% or ±20 μV
Milliamps	0	50	1	±0.2% or ±0.2 μA
Resistance low	0	750	20	±0.2% or ±0.1 Ω
Resistance high	0	10 k	400	±0.5% or 10 Ω

Thermocouple Inputs

Input Type	°C			°F		
	Range	Min. Span	Accuracy	Range	Min. Span	Accuracy
B	-18 to 1800	710	±2.0*	0 to 3270	1278	±3.6*
E	-100 to 900	45	±0.5	-148 to 1652	81	±0.9
J	-100 to 900	50	±0.5	-148 to 1652	90	±0.9
K	-100 to 1300	65	±0.5	-148 to 2372	117	±0.9
L	-100 to 900	50	±0.5	-148 to 1652	90	±0.9
N	-200 to 1300	90	±0.5	-328 to 2372	162	±0.9
R&S	-18 to 1700	320	±1.0*	0 to 3092	576	±1.8*
T	-250 to 300	60	±0.5	-418 to 572	108	±0.9
RTD	-200 to 600	25	±0.5†	-328 to 1112	45	±0.9†

Min. span below zero: Type T: 70°C/126°F, Type N: 105°C/189°F, TC standards: DIN 43710/IEC 584

*Performance accuracy is not guaranteed below 300°C (572°F) for types B, R and S thermocouples.

†RTD, 3-wire platinum, 100 Ω per DIN 43760 standard (IEC751), with temperature over 300°C (575°F) accuracy is ±1.0°C (±1.8°F)

To Order (Specify Model Number)

Model Number	Price	Description
CTC1911	\$1530	1-pen recorder with 1 controller
CTC1912	1910	2-pen recorder with 1 controller
CTC1913	2295	3-pen recorder with 1 controller
CTC1914	2650	4-pen recorder with 1 controller
CTC1922	2100	2-pen recorder with 2 controller
CTC1923	2525	3-pen recorder with 2 controller
CTC1924	2830	4-pen recorder with 2 controller

All units include the following for each pen: 2 digital inputs, relay output, control or retransmission output, transmitter power supply, and isolated input. Recorder comes complete with package of paper, one pen per channel and operator's manual. **Ordering Example:** CTC1912-4R, 2-pen recorder with 1 controller and optional 4 relay outputs \$1910 + 245 = \$2155. OMEGACARESM extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. **OCW-1 OMEGACARESM** extends standard 2-year warranty to a total of 3 years (\$150), \$2155 + 150 = \$2305

Options

Ordering Suffix	Price	Description
-4R	\$245	4 relay outputs (max 2)
-24V	110	24 Vdc power option
-RS485	275	RS-485 communications
-C1D2	50	Class 1, division 2, rated
-8DI	245	8 digital (logic) inputs
-8DO	245	8 digital (logic) outputs
-TOTAL	250	Totalization for up to 4 channels
-MT	250	Math functions and timer
-TMT	400	Totalization, math and timer combo
-TTEV	110	True time event pen
-RAMP	250	Ramp/soak programmable profiles

Accessories

Model Number	Price	Description
CT-1900-RED	\$17	5 red pens channel 1
CT-1900-GREEN	17	5 green pens channel 2
CT-1900-BLUE	17	5 blue pens channel 3
CT-1900-BLACK	17	5 black pens channel 4
CT-1000C-100/7*	140	500 charts, 0-100 range, 7-day
CN34-SW	150	Configuration software

*Other chart ranges available; consult Sales

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