

Cryogenic Autotune Temperature Controllers

Model CYC321-01

\$1835

Basic Unit

Shown smaller
than actual size



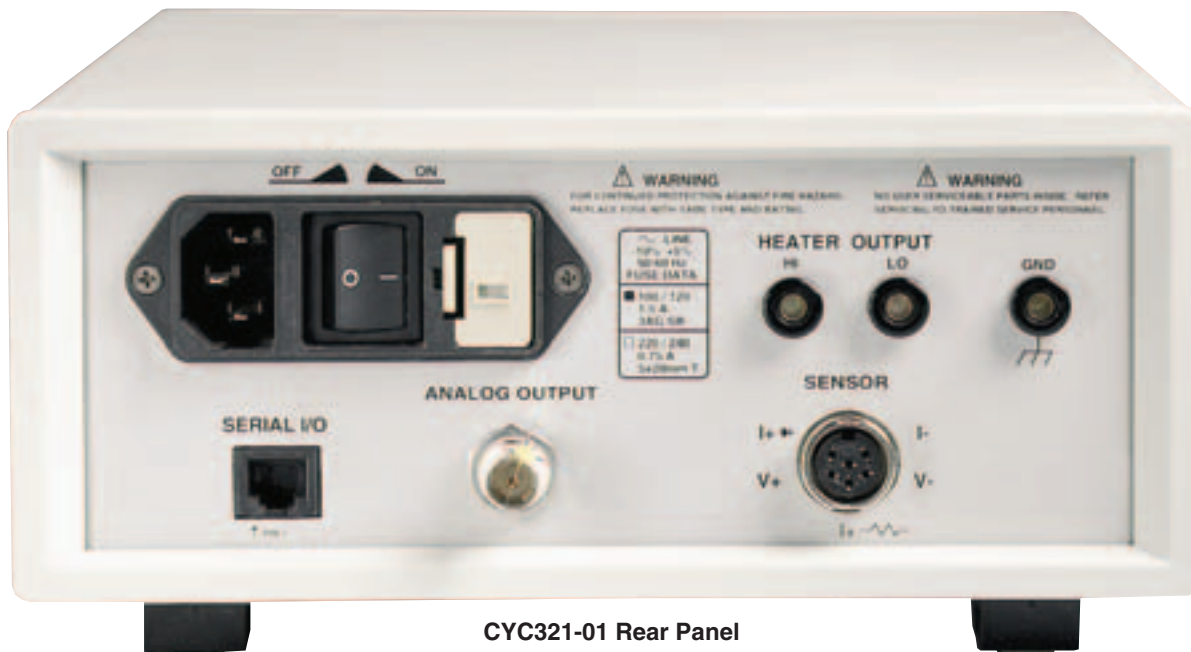
- ✓ Autotune PID
- ✓ For Temperature Control from 1.4 to 800 K
- ✓ Electronic Accuracy and Control Stability to $\pm 0.1^{\circ}\text{C}$
- ✓ Autotuning—PID Parameters Automatically Determined
- ✓ Manual Tuning of PID Parameters via Front Panel
- ✓ Silicon Diode, 100 Ω Pt RTD, or Thermocouple Input
- ✓ Ability to Store One User Defined Calibration Curve
- ✓ RS-232C Communications Standard
- ✓ 25 Watt dc Heater Output
- ✓ Small Rack Mount Package
- ✓ Isolated Current Source Allows True 4-Wire Sensor Readings For High Instrument Accuracy

The CYC321 Series Cryogenic Temperature Controllers offer a simple, low cost answer to basic low temperature control needs. They incorporate a scroll type entry so that setup can easily be accomplished from the front keypad. Three models are available to accommodate either silicone diode, RTD or thermocouple input. The operator can also enter a user-defined curve, for a custom sensor. This curve can have up to 97 points plus two end points. The curve values are entered over the standard RS-232 interface.

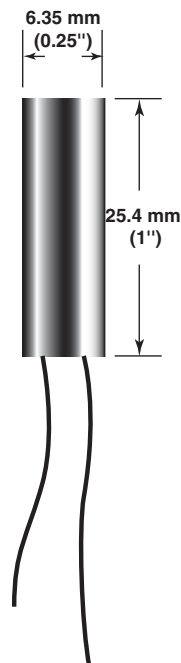
A cryogenic system is a complex arrangement of thermal resistances and heat capacities which are represented by thermal mass and time constants.

The CYC321 Series analyzes this system's operating parameters on-line. The Autotune feature increases the user's efficiency by automatically calculating the correct proportional (gain), integral (reset) and derivative (rate) control parameters within minutes. Once set, the PID values are only modified when the system characteristics change. Time spent adjusting or fine-tuning the controller is eliminated, leaving the user with more time to experiment with something other than controller settings! Heater output of the CYC231 Series is a variable dc current for quiet, stable control.

Cryogenic Temperature Controller



CYC321-01 Rear Panel



CYC320-HTR Heater Cartridge

Specifications

CYC321: Silicon Diode, 1.4 K to 475 K

CYC322: 100 Ω Platinum RTD, 30 K to 800 K

CYC324: Ch-AuFe (0.07%) thermocouple, 4 K to 325 K; E thermocouple, 40 K to 425 K; K thermocouple, 90 K to 325 K; T thermocouple, 90 K to 485 K

Curve Storage: Memory space for one 99 point user defined curve

Display: 8 digit alphanumeric LED display

Resolution: 0.1 (K or $^{\circ}$ C)

Instrument Accuracy when used with:

Silicon diode: ± 0.2 mV $\pm 0.02\%$ rdg;
100 Ω RTD: ± 20 mV $\pm 0.05\%$ rdg;
thermocouple: ± 2 μ V $\pm 0.05\%$ rdg

OMEGACARESM extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARESM covers parts, labor and equivalent loaners.

System Accuracy: Instrument accuracy plus sensor accuracy; ranges from 0.1 K at 4.2 K to 0.6 K at 800 K

Repeatability: ± 0.1 (K or $^{\circ}$ C) or better (dependent on sensor sensitivity)

TEMPERATURE CONTROL CHARACTERISTICS

Setpoint Resolution: 0.1 (K or $^{\circ}$ C)

Control Stability:

Better than ± 0.1 K in a properly designed system

Automatic Control Modes: P, PI, or PID control user selectable

Manual Control Modes:

Proportional (Gain) 0 to 999;
Integral (Reset) 1 to 999 sec;
Derivative (Rate) 0 to 50% of Integral Time

Heater Output: 25 Watts/1 Amp at 25 V compliance

Heater Load: 25 Ω or greater. Automatic shutoff if load < 20 Ω

GENERAL

Response Time: 1 sec. electronic data update rate (typical)

Communications:

RS-232C three-wire, half-duplex, asynchronous transmission at 300 or 1200 baud. RJ-11 modular socket. User may input Setpoint, Heater On/Off, Curve Data; Output data includes Temperature, Setpoint, Heater %, External Curve

Power: 110 or 220 Vac selectable, 65 VA

Dimensions: 217 H x 90 W x 317 mm D (8.5 x 3.5 x 12.5")

Weight: 2.7 kg (6 lb)

CYC320-HTR Specifications

Cartridge Heater:

Nickel-Chromium Resistance wire with MgO Insulation, Two solid pins

MOST POPULAR MODELS HIGHLIGHTED!

To Order (Specify Model Number)		
Model No.	Price	Input Type
CYC321-01	\$1835	Silicon diode controller
CYC322-02	1835	Pt100 RTD controller
CYC324-03	1940	Thermocouple controller

Each unit supplied with sensor input connector power cord, double banana plug for heater output and operator's manual.

Note: Units are calibrated at no additional cost.

Ordering Example: CYC321-01, silicone diode controller, CYC320-SHC heater cable assembly, CY7-SD7, silicon sensor, \$1835 + 135 + 105 = \$2075.

OCW-3 OMEGACARESM extends the standard 1-year warranty to a total of 4 years (\$350), \$1835 + 350 = \$2185.

Accessories

Model No.	Price	Description
CYC320-SHC	\$135	Cable assembly for CYC321 and CYC322
CYC320-HTR	46	Cartridge heater, 25 watts
CYD200-C	20	RJ11 jack and 3 m (10') of cable, RS-232 adaptor
CYD200-D	35	RJ11 to DB25 adaptor, connects RJ11 to 25-pin RS-232 serial port
CYD200-DB9	35	RJ11 to DB9 adaptor, connects RJ11 to 9-pin RS-232 serial port

For information on precision calibration option yielding highest readout accuracy, please contact our Cryogenic Applications Engineers at 1-800-TC-OMEGA.



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