

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

Easy Operation and Numerous Uses Are Constants For This 1/8 DIN Ramping Controller



The Watlow SERIES 982 vertical ⅛ DIN-ramping controller and its companion, the horizontal SERIES 981, offer four-file / 24-step program capability, or easy-to-use non-ramping set point operation. The controller is designed with most typical programming needs in mind. The SERIES 981/982 is among the most easy-to-use ramping controllers.

Ramping operations include four files with six steps in each file. Programming options include ramp-rate or time-based profiles, guaranteed soak deviation, program looping and program status selection after power outage. The files may be linked to create a single 24-step program.

The primary analog input accepts 11 different thermocouple types, RTD or scalable process inputs. A second analog input can be factory configured for a slidewire feedback input common in gas valve control. With up to two event inputs, the SERIES 981/982 offers remote program start or hold capability and allows the operator to program a wait-for event.

The SERIES 981/982 is packaged with a NEMA 4X front panel to withstand harsh environments, four inch case depth and touch-safe wiring terminal.

The SERIES 981/982 features a three-year warranty and four day shipment, on all model, in limited quantities.

Features and Benefits

Four files / 24 steps
- Designed to meet the needs of most ramping applications

Auto-tuning
- One-step tuning of system parameters for easy operation

Optional dual auxiliary outputs
- Flexible time-based events or alarm outputs

Optional retransmit of set point or process variable
- For master programmer or chart recorder connection

Hardware and software parameter lockout options
- Provides several levels of operator security

NEMA 4X front panel
- Provides watertight corrosion resistance

10Hz sampling rate and burst-fire control
- Smooth, accurate control of the process

Slidewire feedback
- Interfaces with most slidewire input positioning devices

Your Authorized Watlow Distributor is:

WATLOW
1241 Bundy Boulevard
Winona, Minnesota 55987-5580 USA
Phone: +1 (507) 454-5300
Fax: +1 (507) 452-4507
Internet: www.watlow.com
e-mail: info@watlow.com

WIN-981-0903

ISO 9001
Registered Company
Winona, Minnesota USA

North American Sales Offices: **Atlanta**, (770)972-4948 • **Austin**, (512)249-1900 • **Birmingham**, (205)678-2358 • **Charlotte**, (704)573-8446 • **Chicago**, (847)458-1500 • **Cincinnati**, (513)398-5500 • **Cleveland**, (330)467-1423 • **Dallas**, (972)620-6030 • **Denver**, (303)798-7778 • **Detroit**, (248)651-0500 • **Eastern Canada**, (450)433-1309 • **Houston**, (281)440-3074 • **Indianapolis**, (317)575-8932 • **Kansas City**, (913)897-3973 • **Los Angeles**, (714)935-2999 • **Louisiana**, (318)864-2864 • **Maryland/Virginia**, (215)345-8130 • **Minneapolis/Manitoba**, (952)892-9222 • **Nashville**, (615)264-6148 • **New England**, (603)882-1330 • **New York/New Jersey/Philadelphia**, (215)345-8130 • **New York, Upstate**, (716)438-0454 • **Ontario**, (905)979-3507 • **Orlando**, (407)351-0737 • **Phoenix**, (602)795-7712 • **Pittsburgh**, (412)322-5004 • **Portland,** (360)254-1009 • **Raleigh/Greensboro**, (336)766-9659 • **St. Louis**, (314)878-4600 • **Sacramento**, (707)425-1155 • **San Diego**, (714)935-2999 • **San Francisco**, (408)434-1894 • **Seattle**, (425)222-4090 • **Tampa/St. Petersburg**, (407)647-9052 • **Tulsa**, (918)496-2826 • **Western Canada**, (604)444-4881 • **Wisconsin, North** (920)993-2161 • **Wisconsin, South** (262)723-5990
Asian Sales Offices: **Australia,** +61 (39) 335-6449 • **China,** +86 (21) 6277-2138 • **Japan,** +81 (03) 5403-4688 • **Korea,** +82 (02) 575-9804 • **Malaysia,** +60 (4) 641-5977 • **Singapore,** +65 6773-9488 • **Taiwan,** +886 (0) 7-288-5168 **European Sales Offices:** **France,** +33 (01) 3073-2425 • **Germany,** +49 (0) 7253-9400-0 • **Italy,** +39 (02) 458-8841 • **Sweden,** +46 31 7014959 • **United Kingdom,** +44 (0) 115-964-0777
Latin American Sales Office: **Mexico,** +52 (442) 217-6235

© 2003 Watlow Electric Manufacturing Company

Printed in the USA on Recycled Paper, 15% Postconsumer Waste

Specifications

Control Mode
- Single input, quad output, optional retransmit of set point or process variable.
- Programmable direct- and reverse-acting control outputs.
- 4-file, 6 steps per file, time/temperature profile or fixed-set-point control.
- Ramp-rate or time-based programming.
- Selectable control status following power loss.

Agency Approvals
- CE: 89/336/EEC Electromagnetic Compatibility Directive.
  EN 50081-2: 1994 Emissions.
  EN 50082-2: 1994 Immunity.
- 73/23/EEC Low Voltage Directive.
  EN 61010-1: 1993 Safety.
- UL® #873, C-UL® File #E43684
- NEMA 4X

Operator Interface
- Dual, four digit LED displays. Upper: 0.4 in. (10 mm). Lower: 0.3 in. (8 mm).
- Mode, Hold/Run, Display, Up and Down keys.

Sensors/Inputs
- Contact input for software function select (event input).
- Thermocouple Types B, C[2], D[2], E, J, K, N, R, S, T and Pt 2[2].
- RTD resolution in 1° or 0.1° RTD scales.
- Process variables: 0-20mA, 4-20mA, 0-5V⎓ (dc), 1-5V⎓ (dc), and 0-10V⎓ (dc).
- Slidewire or digital event input options.
- Sensor break protection de-energizes system for safety. Latching or non-latching.

Input Range

Specified temperature ranges represent the controller's operational span.

Thermocouple

Available with basic or universal signal conditioner

Type C②	0	to	2316°C	(32	to	4200°F)
Type D②	0	to	2316°C	(32	to	4200°F)
Type E	-200	to	799°C	(-328	to	1470°F)
Type J	0	to	816°C	(32	to	1500°F)
Type K	-200	to	1371°C	(-328	to	2500°F)
Type N	0	to	1300°C	(32	to	2372°F)
Type T	-200	to	399°C	(-328	to	750°F)
Pt 2②	0	to	1395°C	(32	to	2543°F)

Available with universal signal conditioner

Type B	870	to	1816°C	(1598	to	3300°F)
Type R	0	to	1760°C	(32	to	3200°F)
Type S	0	to	1760°C	(32	to	3200°F)

RTD Resolution (DIN or JIS)

1° (DIN)	-200	to	800°C	(-328	to	1472°F)
1° (JIS)	-200	to	630°C	(-328	to	1166°F)
0.1° (DIN and JIS)						
	-73.3	to	537.7°C	(-99.9	to	999.9°F)

Process

-999 to 9999 units for all: 0-5V⎓(dc); 1-5V⎓(dc); 0-10V⎓(dc); 0-20mA; and 4-20mA.

Input 2 slidewire feedback

100 to 1200Ω.

Line Voltage/Power
- 100-240V≂(ac/dc) +10 percent, -15 percent; 50/60Hz, ±5 percent.
- 24 to 28V≂(ac/dc) +10 percent, -15 percent; 50/60Hz, ±5 percent.
- Fused internally (factory replaceable only) Slo-Blo® type (time-lag): 2A, 250V for high voltage versions; 5A, 250V for low voltage versions.
- Power consumption 16VA maximum.
- Non-volatile memory retains data if power fails.

Operating Environment
- 0 to 55°C (32 to 130°F), 0 to 90 percent RH, non-condensing.

Storage Temperature
- -40 to 85°C (-40 to 185°F).

Terminals
- #6 compression universal head screws, accepts 28-14 gauge wire.

Shipping Weight
- .35 kg lbs (3.01 lbs).

Sample/Update Rates
- 1 input, PID and control outputs: 10Hz.
- 2 inputs: 5Hz.
- Display: 2Hz.
- Retransmit, remote set point and alarm outputs: 1Hz.

① Electromechanical relays warranted for 100,000 closures only. Solid-state switching devices recommended for applications requiring fast cycle times or extended service life.

② Not an ANSI/ASTM symbol.

UL® and C-UL® are registered trademarks of the Underwriter's Labortories, Inc.

Ordering Information

To order, complete the code number with the information below:

SERIES 981/982 — **98 C - - -**

Single chanel ⅛ DIN ramping controller, vertical or horizontal mount

Power Supply & Mounting
1 = 100 to 240V≂(ac/dc) nominal, horizontal mounting
2 = 100 to 240V≂(ac/dc) nominal, vertical mounting
3 = 24 to 28V≂(ac/dc) nominal, horizontal mounting
4 = 24 to 28V≂(ac/dc) nominal, vertical mounting

Software
C = Standard (4-file, 6 step per file, program capability)

Input 1
1 = Basic thermocouple signal conditioner (excluding Type B, R, and S)
2 = Universal signal conditioner (see range information)

Input 2
0 = None
3 = Slidewire feedback (see range information)
5 = Second digital event (one digital event is standard on all units)

Output 1
B = Solid-state relay, Form A, 0.5A, with RC suppression
C = Switched dc or open collector, isolated
D = Electromechanical relay①, Form C, 5A with RC suppression
E = Electromechanical relay①, Form C, 5A without RC suppression
F = Universal process, 0-5V⎓(dc), 1-5V⎓(dc), 0-10V⎓(dc), 0-20mA, 4-20mA, isolated
K = Solid-state relay, Form A, 0.5A, without RC suppression

Output 2
A = None
B = Solid-state relay, Form A, 0.5A, with RC suppression
C = Switched dc or open collector, isolated
D = Electromechanical relay①, Form C, 5A with RC suppression
E = Electromechanical relay①, Form C, 5A without RC suppression
F = Universal process 0-5V⎓(dc), 1-5V⎓(dc), 0-10V⎓(dc), 0-20mA, 4-20mA, isolated
K = Solid-state relay, Form A, 0.5A, without RC suppression
T = External signal conditioner power supply, 5, 12 or 20V⎓(dc) @ 30mA

Output 3
A = None
B = Solid-state relay, Form A, 0.5A, with RC suppression
C = Switched dc, isolated
J = Electromechanical relay①, Form A or B, 5A without RC suppression
K = Solid-state relay, Form A, 0.5A, without RC suppression
M = Retransmit, 0-20mA⎓(dc), 4-20mA⎓(dc)
N = Retransmit, 0-5V⎓(dc), 1-5V⎓(dc), 0-10V⎓(dc)
T = External signal conditioner power supply, 5, 12 or 20V⎓(dc) @ 30mA

Output 4
A = None
B = Solid-state relay, Form A, 0.5A, with RC suppression
C = Switched dc or open collector, isolated
D = Electromechanical relay①, Form C, 5A with RC suppression
E = Electromechanical relay①, Form C, 5A without RC suppression
K = Solid-state relay, Form A, 0.5A, without RC suppression
R = EIA/TIA-232 communications, opto-isolated
U = EIA/TIA-232, EIA/TIA-485 communications, opto-isolated
S = EIA/TIA-485, EIA/TIA-422 communications, opto-isolated
T = External signal conditioner power supply, 5, 12 or 20V⎓(dc) @ 30mA

Display Color (Upper/Lower)
GG = Green/Green RG = Red/Green
GR = Green/Red RR = Red/Red

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP