CLS200: Compact Loop System, Providing Powerful Control in a 1/8 DIN Package

Features and Benefits

PID control of up to 16 heat and cool loops
- Minimal panel space per loop
- Reduced installation time
- More reliable: fewer parts means fewer failures

Auto-tune
- Less time tuning
- Achieve excellent control with less expertise

Menu-guided operation with full text display
- Setup controller quickly
- Easy to operate

Eight jobs stored and recalled
- Quick to change from one process to another

Multiple and mixed inputs
- Easy to change sensor types at the last minute
- Less to learn, less inventory

Sensor failure detection
- Reduce time troubleshooting reversed, shorted and open sensors

High/low process and deviation alarms for each input
- Configure alarms as needed to integrate with PLC or other control elements

34 digital outputs
- Flexible configuration: use outputs as needed for control and alarms

EIA/TIA-232 and 485 communications
- Use software to configure and operate
- Integrate with other controllers and software

The Watlow Anafaze CLS200 series is a powerful line of controllers, combining performance and flexibility with compact design. The 4, 8, and 16 loop versions provide complete control solutions for a broad range of applications. Support for multiple types of sensor inputs is available, including thermocouples, RTDs, linear voltage, current and frequency. Each controller can operate as a stand-alone system, and includes built-in serial communications for computer interface and data acquisition. Optional programmable ramp and soak features allow complex batch processing and sequencing. An enhanced features option offers cascade control, ratio control, differential control, process variable retransmit, and remote analog set point.

The CLS200 series controllers are UL® and C-UL® listed and meet the requirements of the European Community EMC Directive and carry the CE mark.

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WATVIEW™ Software

WATVIEW™ is an optional Windows®-based human-machine interface (HMI) program that can be used as the primary interface to one or more Watlow controllers. WATVIEW provides channel setup and monitoring of up to 32 controllers at the same time. The easy-to-use graphical user interface (GUI) allows you to set control parameters, create user-defined recipes, view and manage alarms, set up and view trend plots and real-time data and export logged data to spreadsheet applications. WATVIEW requires less configuration time than other more expensive packages, because it is designed specifically for Watlow Anafaze controllers.

DAC and SDAC Modules

The optional DAC and SDAC modules are available for Watlow Anafaze CLS200 controllers.

DAC

The DAC (digital to analog converter) converts one or two of the controller's distributed zero crossing (DZC) output signals to analog signals. Each output is field configurable for 4-20mA⎓(dc), 0-5V⎓(dc), or 0-10V⎓(dc).

SDAC

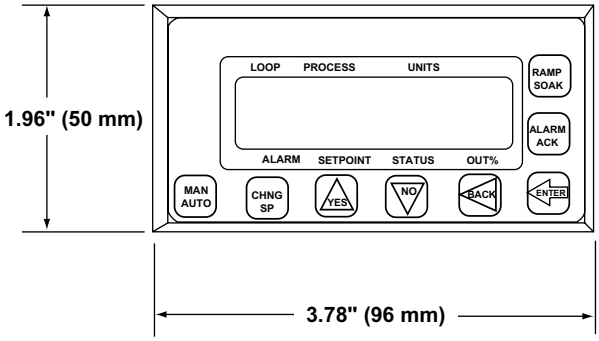
The SDAC (serial digital to analog converter) converts one controller output to a precise analog voltage or current signal. The unit is typically used for process variable retransmit, open-loop control, motor or belt speed control, or phase-angle fired SCR power controllers. The SDAC bears the CE mark and is UL® and C-UL® listed.

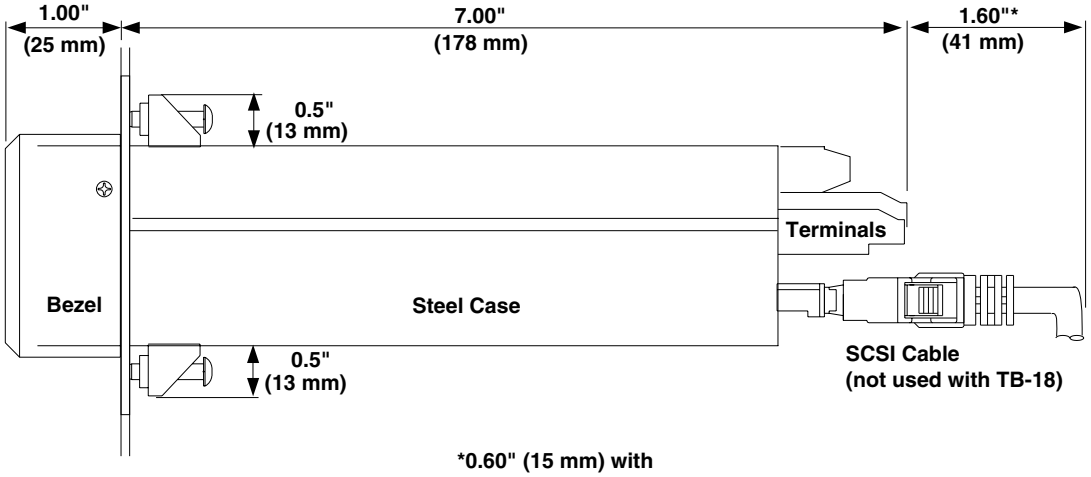
Firmware Options

Choose firmware with the features needed for the application:

- Standard—includes closed-loop PID control, auto-tune, alarms, job memory, and failed sensor detection.
- Extruder— includes the standard firmware features, with PID control specifically adapted for plastic extruders.
- Ramp and Soak—includes the standard firmware features with the addition of ramp and soak and process variable retransmit. Each channel can be configured for standard PID control or ramp and soak operation. Unused control outputs on any channel can be configured for retransmit.
- Enhanced Features— includes the standard firmware features with the addition of process variable retransmit, remote analog setpoint, cascade control, ratio control and differential control algorithms. Each channel can be configured for standard PID control or one of the other control algorithms. Each channel of cascade control or remote analog setpoint requires two controller channels. Unused control outputs on any channel can be configured for retransmit.

Because the CLS200 has no onboard analog outputs, applications that use process variable retransmit typically require one SDAC module per retransmitted signal.





*0.60" (15 mm) with
Right Angle SCSI Connector

CLS200 Specifications

Operator Interface
- 32-character vacuum fluorescent display
- Eight-key keypad to access guided menus and prompts, enter passkey sequence, set values, switch between single channel and multiple channel displays
- Controller configuration can be loaded through the standard serial port

Analog Inputs
- CLS204 4 Differential
- CLS208 8 Differential
- CLS216 16 Single-ended

Noise Rejection
- 120db at 60Hz

Temperature Coefficient
- 40 ppm/˚C

Sensors/Inputs
- Thermocouples: User-selectable type, direct connection, linearization, reference junction compensation, reversed and shorted T/C detection and upscale break protection with output averaging
- RTD: (CLS204 and CLS208 only) 2- or 3-wire, platinum, 100Ω @ 0˚C, DIN 0.003850Ω/Ω/˚C curve, user-selectable range. Two user-selectable ranges offer different resolutions. Requires scaling resistors. See Special/Linear Inputs in Ordering Information.
- Linear: current and voltage signals from linear transmitters
- Pulse input

Input Range and Accuracy

Sensor	Range (°F)	Range (°C)	Accuracy
Type B	150 to 3200°F	66 to 1760°C	±4.0°C
Type E	-328 to 1448°F	-200 to 787°C	±1.0°C
Type J	-350 to 1400°F	-212 to 760°C	±1.2°C
Type K	-450 to 2500°F	-268 to 1371°C	±1.3°C
Type R	0 to 3210°F	-18 to 1766°C	±2.8°C
Type S	0 to 3200°F	-18 to 1760°C	±2.8°C
Type T	-450 to 750°F	-268 to 399°C	±1.6°C

RTDs available on CLS204 and CLS208 only.

Sensor	Range (°F)	Range (°C)	Accuracy
RTD1	-148.0 to 527.0˚F	-100.0 to 275˚C	±1.1˚C
RTD2	-184 to 1544˚F	-120 to 840˚C	±1.6˚C

Note: Accuracy @ 25˚C ambient. Valid for 10 to 100 percent of span except Type B, which is specified for 800˚F to 3200˚F. RTD is for 100 percent of span.

Linear Voltage and Current Inputs
Requires scaling resistors. See Special Inputs in Ordering Information.

0-10mA⎓(dc)
0-20mA⎓(dc)/4-20mA⎓(dc)
0-100mV⎓(dc)
0-500mV⎓(dc)
0-1V⎓(dc)
0-5V⎓(dc)
0-10V⎓(dc)
0-12V⎓(dc)

Other ranges available. Consult factory.

Pulse Input
- One TTL-level square wave input up to 2kHz

Input Sampling Rate @ 60Hz
Each channel has the following scans per second:
- CLS204: 6 samples per second (update time: 0.167 sec.)
- CLS208: 3 samples per second, (update time: 0.333 sec.)
- CLS216: 1.5 samples per second, (update time: 0.667 sec.)

Internal Measurement Resolution
- 0.006%, greater than 14 bits

Calibration
- Automatic zero and full scale

Digital Inputs
- TTL-level used for selecting recipes or jobs, or R/S triggers
- 8 inputs and 1 pulse input with 50-pin terminal board option
- 2 inputs and pulse input or 3 inputs with 18-pin terminal block option

Digital Outputs
- 34 digital outputs are available with 50-pin terminal board option
- 10 control outputs with 18-pin terminal block option
- 1 or 2 control outputs are user assigned for each loop
- Each control output can be configured for on-off time proportioning, or distributed zero crossing
- Outputs sink up to 60mA each at 5V⎓(dc)
- 350mA at 5V⎓(dc) available from on-board supply

Alarm Outputs
- Independent process and deviation alarms for each channel
- Alarms can operate any output not used for control
- User-programmable deadband, delay and startup suppression
- Global alarm output activates when any alarm occurs
- Watchdog output indicates controller is functioning correctly

Serial Interface
- EIA/TIA-232 or EIA/TIA-485

Baud Rate
- 2400, 9600 or 19200, user-selectable

Communications Protocols
- Form of ANSI X3.28-1976, (D1, F1) compatible with Allen-Bradley PLC/2
- Modbus™ RTU

Line Voltage/Power
- 15 to 24V⎓(dc) ± 3V⎓(dc) @ 1A (maximum), 300mA (no load)

Agency Approvals
- UL®, C-UL® listed: UL® 916, Standard for Energy Management Equipment
- CE Mark: Electromagnetic Compatibility (EMC) Directive 89/336/EEC

Your Authorized Watlow Distributor Is:

Ordering Information

CLS200
Code Number **2 _ _ -**

Number of Channels
04 = 4 channel
08 = 8 channel
16 = 16 channel

Controller Type
1 = Standard EPROM
2 = Extruder
3 = Ramp and soak
4 = Enhanced features

Terminal Block
0 = No terminal block accessory
1 = 18-pin terminal block (CLS204 and CLS208 only)
2 = 50-pin terminal block installed (includes 3 foot SCSI cable)

Power Supply
0 = No power supply
2 = 120/240V~(ac), 50/60Hz power supply adapter (5V⎓[dc] @ 4A, 15V⎓[dc] @ 1.2A) (CE approved)

SCSI Cables
0 = No SCSI cable (3 foot cable included with 50-pin terminal block)
1 = 6 foot SCSI cable
2 = 3 foot right angle SCSI cable
3 = 6 foot right angle SCSI cable

Serial Communication Cables
0 = No serial communication cable
1 = 10 foot serial communication cable (DB-9 female/bare wire)
2 = 25 foot serial communication cable (DB-9 female/bare wire)
3 = 50 foot serial communication cable (DB-9 female/bare wire)

Serial Communication Jumper Settings
0 = EIA/TIA-232
1 = EIA/TIA-485
2 = EIA/TIA-485 Terminated

Special Inputs
(Standard unit is configured for thermocouples and -10 to 60mV linear inputs. For other sensors, order special inputs. See below for ordering instructions. For CLS216 specify two digits, for CLS204 and CLS208 specify one digit.
0 or 00 = Thermocouples and -10 to 60mV inputs only
X or XX = Number of current, voltage or RTD inputs

C L S S I _ _ - _ _ -

Special Input Type
(Not required for thermocouple sensor inputs)
20 = RTD 1: 0.1˚, -148 to 527˚F (-100 to 275˚C)
Not available on CLS216
21 = RTD 2: 1˚, -184 to 1544˚F (-120 to 840˚C)
Not available on CLS216
43 = 0-10mA⎓(dc)
44 = 0-20mA⎓(dc)/4-20mA⎓(dc)
50 = 0-100mV⎓(dc)
52 = 0-500mV⎓(dc)
53 = 0-1V⎓(dc)
55 = 0-5V⎓(dc)
56 = 0-10V⎓(dc)
57 = 0-12V⎓(dc)

Start Channel
XX = Channel Number XX

End Channel
XX = Channel Number XX

Availability
Up to 4 weeks, depending on complexity and order release quantity. Consult factory for details.

Accessories

The following accessories are available for the CLS200.

Software Ordering Information

WATVIEW Human Machine Interface Software supports CLS200 Series controllers with standard, enhanced features or extruder firmware option. Support for ramp and soak option is pending. Consult with factory for availability.

WATVIEW-C Configurator Edition
Includes spreadsheet display, setup screens, recipe manager without calendar start, communication diagnostics, password security, online help, Active X (OLE 2.0) server.

WATVIEW-R Runtime Edition
Includes all the features of the Configurator edition plus data logging, trend graphing, alarm management, recipe calendar start, and user event log

WATVIEW-D Developer Edition
Includes all the features of the Runtime edition plus capability of developing custom screens.

Ordering Information

DAC/SDAC

Code Number **D A C -**

DAC/SDAC Type
1 = Dual digital to analog converter module (converts two DZC control outputs to 0-5V⎓[dc] analog outputs).
2 = Dual digital to analog converter module (0-10V⎓[dc] analog outputs).
3 = Dual digital to analog converter module (4-20mA⎓[dc] analog outputs).
4 = Serial digital to analog converter module (SDAC); provides one high precision isolated voltage or current analog output (range is set from the controller).

Power Supply
A = None
B = 16V⎓(dc), 300mA, 120V~(ac), 60Hz power supply (supplies power for up to 10 dual DAC modules)
C = 120/240V~(ac), 50/60Hz power supply adapter, (5V⎓[dc] @ 4A and 15 V⎓[dc] @ 1.2A) Powers up to 13 SDAC modules or 12 dual DAC modules.

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