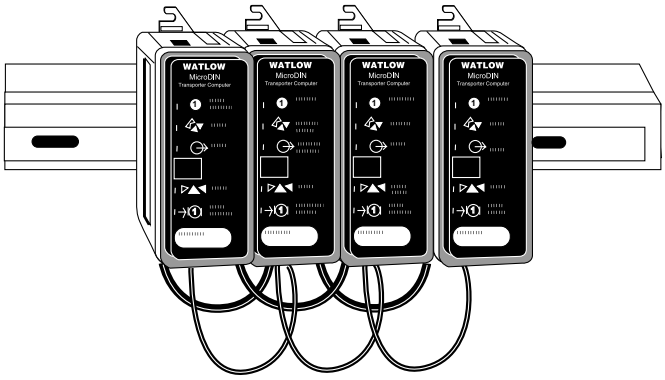
M i c r o D I N™



DIN Rail Mount Temperature Control with Easy Modbus™ Communication

The new Watlow MICRODIN™ series controllers provide precise measurement and control with easy communication to personal computers and programmable logic controllers used in laboratories and industry. This superior controller is designed with simple and straightforward commands to make it easy to set up and operate. The MICRODIN is a high-performance controller that is capable of stand-alone operation and uses the popular Modbus™ communications protocol with a standard EIA-485 serial interface for parameter set up and viewing.

The behind-the-panel, DIN rail mount design of the MICRODIN controller provides significant savings by eliminating the need for expensive panel hole punching and by simplifying panel wiring. Combine these savings with touch-safe removable connectors and the result is low installation costs and minimal down time for service and repair.

MICRODIN is the perfect solution for applications that require top-of-the-line dedicated temperature control loops with no user interface integrated into a complete control system using digital communications. The absence of an operator interface makes the MICRODIN excellent for use with PC-based software, such as WATLINK™.

The MICRODIN controller is manufactured by ISO 9001 registered Watlow Controls and is reliably backed by a three-year warranty.

Features	Benefits
• EIA-485 serial communications with Modbus® RTU protocol	• Easy remote set up and monitoring
• DIN rail/Sub panel mounting	• Fast, low cost installation eliminates expensive panel hole punch operations
• Touch-safe removable connectors	• Easy, quick removal for replacement and servicing
• Single control output with alarm output	• Simple programming and operation of controller
• Discrete loops of control, auto-tuning	• Performance equal to discrete panel mount controllers, highly reliable
• 10Hz update rate	• Improved input sampling and controllability

Modbus™ is a trademark of AEG Schneider Automation.
UL® is a registered trademark of Underwriter's Laboratories.

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ISO 9001
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Specifications—W0UD-XSPN Rev B (1160)

Control Mode
- Microprocessor-based, user selectable control modes
- Single input, single output
- Heat or cool auto-tuning

Output #1: User selectable
- On-off; P, PI, PD, PID heat or cool action adjustable switching differential: 1 to 9999 or 0.1 to 999.9 ˚F or ˚C
- Proportional band: 0 to 9999, or 0.0 to 999.9 ˚F or ˚C
- Integral: 0.00 to 99.99 minutes per repeat
- Reset: 0.00 to 99.99 repeats per minute
- Derivative/Rate: 0.00 to 9.99 minutes
- Cycle Time: 0.1 to 60.0 seconds

Output #2: User selectable
- Process or deviation alarm with flashing alarm status indicator
- Alarm with separate high and low set points
- Hysteresis: 1 to 9999˚ switching differential

Operator Interface
- EIA-485 serial communications with Modbus RTU protocol

Sensor Input
- Sensor input sampling rate: 10 samples/second, 10Hz
- Thermocouple, grounded or ungrounded sensors
- RTD 2- or 3-wire, platinum, 100 @ 0˚C calibration to JIS curve (0.003916Ω/Ω/˚C), or DIN curve (0.00385Ω/Ω/˚C)
- Sensor break protection de-energizes control output to protect system or selectable bumpless transfer to manual operation.
- ˚F or ˚C, user selectable
- Sensor operating ranges:

B T/C	32	to	3300˚F	0	to	1816˚C
C (W5) T/C	32	to	4200˚F	0	to	2315˚C
D (W3) T/C	32	to	4200˚F	0	to	2315˚C
E T/C	-328	to	1472˚F	-200	to	800˚C
J T/C	32	to	1382˚F	0	to	815˚C
K T/C	-328	to	2500˚F	-200	to	1370˚C
N T/C	32	to	2372˚F	0	to	1300˚C
Pt 2 T/C	32	to	2543˚F	0	to	1395˚C
R T/C	32	to	3200˚F	0	to	1760˚C
S T/C	32	to	3200˚F	0	to	1760˚C
T T/C	-328	to	750˚F	-200	to	400˚C
RTD (DIN)	-328	to	1472˚F	-200	to	800˚C
RTD (JIS)	-328	to	1166˚F	-200	to	630˚C

- Tenth degree resolution selectable over sensor operating range within limits of -199.9 to 999.9, except for thermocouple Types B, R and S

Primary Control Output (heating or cooling)
- Output update rate: 10 per second, 10Hz (maximum)
- Switched dc (isolated) signal

Internal Load Switching (nominal):
- Switched dc, 22 to 28V⎓(dc), current limited @ 30mA
- Overload current and short circuit protection

External Load Switching (maximum):
- Open Collector 42V⎓(dc) @ 1A
  (An IEC 742 rated power supply is required for CE compliance)

Alarm Output
- Output update rate two per second (2Hz)
- Electromechanical relay, Form A, 2A @ 30V⎓(dc) or 240V~(ac),
- Alarm output can be latching or non-latching, and process or deviation with separate high and low values. Alarm silencing (inhibit) on power-up.

Accuracy
- Calibration accuracy and sensor conformity: ±0.1% of span ±1 @ 77˚F ±5˚F (25˚C ±3˚C) ambient, and rated line voltage ±10% with the following exceptions:
  - Type T; 0.12% of span for -200˚C to -50˚C
  - Types R and S; 0.15% of span for 0˚C to 100˚C
  - Type B; 0.24% of span for 870˚C to 1700˚C
  - Accuracy span: Less than or equal to operating ranges, 1000˚F/540˚C minimum.
- Temperature stability: ±0.2˚F/˚F (±0.2˚C/˚C) rise in ambient maximum for thermocouples, ±0.05˚F/˚F (±0.05˚C/˚C) rise in ambient maximum for RTD sensors
- Voltage stability: ±0.01% of span per percent of rated line voltage

Safety Agency Approvals
- UL®/C-UL 508, File # E102269
  Industrial Control Equipment
- CE to EN 61010

Electromagnetic Compatibility and Immunity
- Complies with EN 50081, EN 50082

Terminals
- Touch-safe set screw type, accepts 26 to 14 gauge wire

Power
- 24-28V≈(ac/dc), -15%, +10% (20.4 to 30.8V≈(ac/dc); 50/60Hz, ±5% V~(ac)
  (An IEC 742 rated power supply is required for CE compliance)
- 5VA typical power consumption
- Data retention upon power failure via nonvolatile memory
- Sensor input isolation to switched dc output and communication circuitry 500V~(ac)

Operating Environment
- 32 to 149˚F (0 to 65˚C)
- 0 to 90% RH, non-condensing
- Storage temperature: -40 to 158˚F (-40 to 70˚C)

Dimensions
- Width x Height x Depth
  1.64" x 4.65" x 5.19" DIN rail mount
  (42 mm x 118 mm x 132 mm)
  1.64" x 4.65" x 5.06" Chassis mount
  (42 mm x 118 mm 129 mm)
- Mounts on DIN rail per DIN EN 50022 (35 mm x 7.5 mm)

Note: These specifications are subject to change without prior notice.

Ordering Information—W0UD-XMNN-Rev A00

UD1A-1CES-

MICRODIN Controller
DIN rail mount temperature control.
1 analog input, 1 control output,
1 alarm output, no operator interface
and EIA-485 Modbus® RTU serial communications

Hardware
1A = Single channel, low voltage

Input
1 = Type B, C, D, E, J, K, N, PT2, R, S, T, 1˚RTD, 0.1˚RTD (JIS and DIN)

Control Output
C = Switched dc, logic signal, isolated

Alarm Output
E = *Electromechanical relay, Form A, 2A, w/o contact suppression

Communications
S = EIA/TIA-485 communications, opto-isolated, Modbus® RTU protocol

Software
00 = Standard
XX = Custom software or setup parameters

Custom Options
00 = None
AA = No Watlow logo on front bezel
AB = French nomenclature on front bezel
AC = German nomenclature on front bezel
AD = Spanish nomenclature on front bezel
XX = Custom bezel or label

*Electromechanical relays are warranted for 100,000 closures only.